GREAT LAKES PROTECTION ACT OF 1981

HEARINGS

BEFORE THE

SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH AND ENVIRONMENT

OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

NINETY-SEVENTH CONGRESS

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GREAT LAKES PROTECTION ACT OF 1981

TUESDAY, DECEMBER 15, 1981

House of Representatives, Committee on Science and Technology, Subcommittee on Natural Resources, Agriculture Research and Environment,
Washington, D.C.

The subcommittee met, pursuant to call, at 9:50 a.m., in room 2318, Rayburn House Office Building, Hon. James H. Scheuer (chairman of the subcommittee) presiding.

Present: Representatives Scheuer, Blanchard, Carney, and Schneider.

Also present: Representatives Lundine, Hertel, and Weber.

[The opening statement of Mr. Scheuer follows:]

HON. JAMES H. SCHEUER
OPENING STATEMENT
HEARING ON GREAT LAKES PROTECTION ACT
DECEMBER 15, 1981

TODAY, THE SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH AND ENVIRONMENT BEGINS FORMAL CONSIDERATION OF THE BILL, H.R. 3600, THE GREAT LAKES PROTECTION ACT OF 1981.

I WOULD LIKE TO COMMEND THE DISTINGUISHED GENTLEMAN FROM MICHIGAN, MR. BLANCHARD, FOR INTRODUCING THIS BILL AND FOR HIS LEADERSHIP IN PROTECTING THE ENVIRONMENTAL QUALITY AND ECONOMIC VIABILITY OF THE GREAT LAKES.

I DON'T THINK ANYONE WOULD ARGUE WITH THE FACT THAT THE GREAT LAKES ARE A VALUABLE NATIONAL RESOURCE THAT MUST BE PRESERVED.

THEY PROVIDE MORE THAN 37 MILLION PEOPLE WITH DRINKING WATER, TRANSPORTATION, FISHING AND PLEASURE BOATING.

THEY ALSO REPRESENT AN ESSENTIAL LINK IN THE COMMERCE OF AN AREA THAT ACCOUNTS FOR 25% OF THE ANNUAL GROSS NATIONAL PRODUCT OF THE UNITED STATES.

THIS ACT WOULD MAKE IT THE CONTINUING POLICY OF THE FEDERAL GOVERNMENT THAT THE GREAT LAKES BE PRESERVED AND PROTECTED.

IT WOULD ALSO ESTABLISH AN OFFICE TO REVIEW AND COORDINATE THE RESEARCH ACTIVITIES OF SOME 20 FEDERAL AGENCIES AND DEPARTMENTS INVOLVED WITH THE GREAT LAKES.

TODAY'S HEARING WILL FOCUS ON THE OBJECTIVES OF THIS LEGISLATION.

IN SUBSEQUENT HEARINGS WE WILL EXAMINE WHETHER H.R.3600 ACHIEVES THESE OBJECTIVES.

BEFORE WE BEGIN, HOWEVER, I WOULD LIKE TO TURN TO THE RANKING MINORITY MEMBER OF THE SUBCOMMITTEE, BILL CARNEY, FOR ANY REMARKS HE MAY WISH TO MAKE.

Mr. **Scheuer**. The session of the subcommittee for December 15th on Natural Resources, Agriculture Research and Environment will begin its formal consideration of the bill H.R. 3600, the Great Lakes Protection Act of 1981.

I would like to welcome my colleagues, Stan Lundine of New York and Ed Weber of Ohio, and, of course, the distinguished ranking minority member, Bill Carney. Mr. Lundine and Mr. Weber represent districts fronting on the Great Lakes. There are eight States that are involved directly with the health and viability of the Great Lakes.

The Great Lakes constitute a major element in our country. Both as to its economy, as to its place in the world of sports, entertainment, and recreation, and I think there can't be an American who isn't concerned and who wouldn't want to be involved with the great effort to save and renew this great national resource.

Without going any further into the matter, I am going to call on Congressman Jim Blanchard of Michigan, the author of this bill, and the Member who has provided the dynamism and the leadership to formulate it and bring it to us today.

Before doing that, I am going to ask my colleagues if they have any desire to make a statement. First I will call on our very distinguished and hard-working member of this subcommittee who has enriched our work and enlivened our days, Bill Carney of New York.

[The opening statement of Mr. Carney follows:]

OPENING STATEMENT OF CONGRESSMAN WILLIAM CARNEY
RANKING MINORITY MEMBER
SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURAL
RESEARCH AND ENVIRONMENT
HEARING ON GREAT LAKES PROTECTION ACT
DECEMBER 15, 1981

THANK YOU, MR. CHAIRMAN. I WILL MAKE MY COMMENTS BRIEF TODAY AS THERE ARE SEVERAL WITNESSES WE WILL BE HEARING FROM. I THANK THEM ALL FOR COMING BEFORE THE SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURAL RESEARCH AND ENVIRONMENT; I AM INTERESTED IN THE SUBSTANCE AND BACKGROUND INFORMATION THEY CAN PROVIDE US WITH.

I WOULD LIKE TO COMMEND CONGRESSMAN BLANCHARD, WHO IS A MEMBER OF THE SUBCOMMITTEE AND WHO HAS INTRODUCED THE LEGISLATION H.R. 3600, "GREAT LAKES PROTECTION ACT OF 1981," WHICH WILL BE DISCUSSED HERE TODAY. MR. BLANCHARD HAS DEMONSTRATED HIS CONTINUED DEDICATION IN PROTECTING AND ENHANCING THE NATURAL RESOURCES AND ECONOMIC VITALITY OF THE GREAT LAKES REGION.

CERTAINLY, AN AREA BORDERING EIGHT STATES (ONE OF WHICH IS MY OWN STATE OF NEW YORK), PROVIDING SOURCES OF FOOD, EMPLOYMENT, TRANSPORTATION, AND RECREATION FOR MILLIONS OF AMERICANS, AND COMPRISING 95 PER CENT OF THE SURFACE FRESHWATER OF THE UNITED STATES, DESERVES THE SERIOUS ATTENTION OF THIS SUBCOMMITTEE AND OF THE CONGRESS. I AM DEEPLY CONCERNED THAT WE ADDRESS THE NEED FOR PRESERVING AND CONSERVING THIS AND ALL OTHER NATURAL AREAS IN OUR GREAT NATION.

MR. CHAIRMAN, I WISH TO SAY NOTHING MORE AT THIS TIME, RATHER I WILL TURN THE HEARING BACK TO YOU SO WE MAY PROCEED TO HEAR FROM OUR DISTINGUSHED WITNESSES.

Mr. **CARNEY**. Thank you very much, Mr. Chairman. I will make my comments brief today, as there are several witnesses we will be hearing from.

I thank them all for coming before the Subcommittee on Natural Resources, Agriculture Research and Environment. I am interested in the substance and background information that they can provide us.

I would like to commend Congressman Blanchard, who is a member of this subcommittee and who introduced the legislation H.R. 3600, the Great Lakes Protection Act of 1981, which I am also a co-sponsor of. That is, of course, the legislation that we will be discussing today.

Mr. Blanchard has demonstrated his continued dedication in protecting and enhancing the natural resources and economic vitality of the Great Lakes Region.

Certainly an area bordering eight States—one of which is my own, New York—providing sources of food, employment, transportation, and recreation for millions of Americans and comprising 95 percent of the surface freshwater of the United States, deserves the serious attention of this subcommittee and of the Congress. I am deeply concerned that we address the need for preserving and conserving this and all other natural areas in our great Nation.

Mr. Chairman, I wish to say nothing more at this time. Rather, I will turn the hearing back to you so we may proceed to hear from our distinguished witnesses. Thank you.

Mr. **SCHEUER**. I thank you, Mr. Ranking Minority Member.

Mr. Lundine.

Mr. **LUNDINE**. I have no opening comments, Mr. Chairman.

Mr. **SCHEUER**. Mr. Weber.

Mr. **WEBER**. No; thank you. It is a pleasure to be with you.

Mr. **SCHEUER**. All right. Let me reaffirm my admiration for the efforts that you have expended and the leadership that you have exhibited on this matter, Mr. Blanchard. You put in an enormous amount of work drawing attention to the problems of the area and what some of the solutions can be. What is even more important, you have avoided the zealotry for either those who would do everything that we know that can improve the environment, regardless of cost and regardless of impact on jobs and the economy, as well as those at the other end of the spectrum who would do nothing that cost anything. You have shown a very thoughtful and a very moderate, a very well conceived and balanced approach outlining the need for taking action that is cost effective and will not impinge negatively on our economy but will accomplish the goals that we have set for ourselves.

With those words of admiration as to the quality of leadership you have shown, I will turn the floor over to you now. Your prepared remarks will be printed in their entirety at this point in the record, and what I would hope you would do is just chat informally with us for as long as you may wish. Then I would very much hope that you would join me and your colleagues up here and participate in interrogating the witnesses. I must say, you have helped us put together an enormously impressive group of experts on this subject and we look forward very much to not only hearing your testimony but theirs, too.

At this time I will yield to you such time as you may wish to consume.

STATEMENT OF HON. JAMES J. BLANCHARD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. **Blanchard**. Thank you, Mr. Chairman, and thank you very much for your kind remarks, and to my colleagues for your kind remarks. I also appreciate your allowing a hearing on this bill, the Great Lakes Protection Act, and also the co-sponsorship of most of you on this subcommittee. I am grateful for that support.

Mr. Chairman, this morning we are going to be discussing and we are discussing one of the most beautiful and economic significant natural resources in the United States, and I speak of the Great Lakes. Taken together, Lakes Huron, Ontario, Michigan, Erie, and Superior comprise 95 percent of the surface fresh water of the United States. That is a fact that is little known in this country, even in the State of Michigan, for example——

Mr. **Scheuer**. You mean all our Adirondack lakes in New York would comprise less than 5 percent of the water area of the Great Lakes?

Mr. **Blanchard**. Oh, yes. The Great Lakes are 95 percent of the surface fresh water of the United States. I think actually it would be the 48 States. You have to exclude Alaska and Hawaii to get that computation.

Mr. **Scheuer**. I'm astonished to hear that figure.

Mr. **Blanchard**. The Great Lakes are the largest reservoir of drinkable, navigable water in the world. They contain 20 percent of the surface fresh water on Earth, enough to cover the entire United States to a depth of 8 feet. One out of ten Americans derives his or her drinking water from the Great Lakes, and just as importantly, the Great Lakes also support an area that accounts for 25 percent of the annual national income of the United States. They provide 37 billion gallons of water a day for industrial processing. Industries in the region like manufacturing, shipping, farming, commercial fishing, tourism, all depend heavily on the water from the Great Lakes.

The Sault locks, which are located between the sister cities of Sault Sainte Marie, Michigan and Ontario, handle more than 100 million shipping tons per year, making them among the world's busiest waterways.

And while water shortages threaten many parts of our Nation, and have threatened them, the Midwest has in its midst the world's larger renewable agricultural water source, the Great Lakes, which provide 151 million gallons of water per day for irrigation purposes. In my own home State of Michigan, for example, the lakes also help to create a climate allowing our farmers to produce a total of 50 commercial products worth about $20 billion in net income to Michigan farmers last year.

The lakes also provide more than 3,700 miles of U.S. shoreline—3,700 miles of shoreline, for swimming, boating, camping, and other recreational purposes. Again using our State as an example, last year the attraction of its shoreline helped generate more than $9 billion in tourism revenue in the State. Now, we have a number of witnesses who are going to document some of what I am highlighting.

There is another fact that is important, of course, to remember, and that is the Great Lakes have been among the most abused bodies of water in our country. Intensive industrial, agricultural, and municipal uses have left a trail of pollution that we cannot ignore or wish away. And while Government and private efforts to clean up the lakes have resulted in measurable improvement, the problems which have plagued the lakes during the past decades—toxic wastes, intergovernmental squabbles and neglect—still call for our attention and concern. It is an ongoing process of water quality surveillance, management, and research. We need to strike a balance—you pointed this out in your statement, Mr. Chairman—we need to strike a balance between the competing uses of the Great Lakes, a balance between the needs of economic development necessary to preserve our current way of life, and the need to protect the Great Lakes' water quality for our own good health, as well as the recreational value and quality of life considerations for our children and our grandchildren.

Mr. **Scheuer**. What percentage of all the tourists and those enjoying your recreation resources are from out of State?

Mr. **Blanchard**. Oh, a substantial number. We're going to have really a leading authority on the tourism aspect of the lakes, Len Barnes, who can talk more specifically about this. He will be one of our witnesses today. That's a good question. It is a fact that tourism generates more than $9 billion in income to Michigan business annually. Probably at least half of this income is from sources outside Michigan.

Mr. **Scheuer**. The picture that is emerging is that the Great Lakes are not only the paroachial concern of the eight States that border on it, but in terms of the impact of the Great Lakes on the economy of the region. You have something of great national significance, and I take it you are saying that tourism also, in effect, makes the Great Lakes a national concern and a part of our national heritage widely used by Americans outside of the eight States that border on the Great Lakes. We are looking at something that is a truly national concern, both from the point of view of the economic impact on our country as well as the recreational facilities that are enjoyed by people from all parts of the country.

Mr. **Blanchard**. You state it very well, and that is one of the purposes of this legislation.

In conclusion, Mr. Chairman, by implementing the Great Lakes Protection Act, I think we can help provide a framework necessary to preserve the balance of competing uses of the lakes.

This morning we are going to be considering one provision of the legislation, that designates the Great Lakes as a unqiue national resource and makes their protection and preservation a matter of national policy, something heretofore nonexistent.

As you may know, our act has 27 cosponsors, many on our subcommittee and those who border the lakes from Ohio and Michigan and elsewhere.

I understand, Mr. Chairman, there will be further hearings next year on the remaining provisions of the legislation which do two things: One, they would require better coordination among the 20

Federal agencies which touch the Great Lakes in one way or another, and second, require a greater scrutiny over what different Federal actions might do to the lakes in terms of their impact on the health of the Great Lakes.

Mr. Chairman and members of the committee, through your help and through your interest, we were able to convince the Environmental Protection Agency to keep open a large lake laboratory in Grosse Ile, Mich. We learned a valuable lesson about the prevailing attitude of the current administration and the previous administration concerning the lakes, which was that both the Carter and Reagan administrations, I think probably from a lack of knowledge, were ready to close down or restrict seriously the operation of that facility in Grosse Ile, which happens to be the only facility that is actually looking into the threat of toxics in the Great Lakes and their effect on human health, which is incredible.

By raising enough hell, quite frankly, and by pointing out the significance of the Great Lakes, and their effect on human health, we were able to convince the current administration to reconsider their position and they have scrapped their plans to close the lab and have seen fit to keep it open, for which I think we should all be grateful.

I, Mr. Chairman, am grateful to you and the members of this subcommittee for the bipartisan effort, and for being persistent on this issue. But I think the Grosse Ile story is one that points up the fact that the greater the awareness we can create, then the more constructive the Federal Government position toward the lakes will be. Once we have achieved a shared awareness with responsible Federal officials of the importance of the health of the Great Lakes to our national interest and to our own human interests, our combined efforts to protect and preserve the lakes can begin in earnest.

I thank you for calling these hearings today, Mr. Chairman. I thank my colleagues again for their bipartisan support for creating greater awareness of the lakes. I think the best thing I can do is take my position with you as a member of the committee, because we have an excellent list of witnesses who are experts in various aspects of the Great Lakes. Most of them have come here from Michigan today to share their views and their knowledge about the Great Lakes.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Blanchard follows:]

OPENING STATEMENT ON
THE GREAT LAKES PROTECTION ACT

Given By

Congressman James J. Blanchard

Mr. Chairman, this morning we will be discussing one of the most beautiful and economically significant natural resources in the United States--the Great Lakes. Taken together, Lakes Huron, Ontario, Michigan, Erie and Superior comprise 95% of the surface fresh water of the United States. I would like you to consider some additional facts about this little understood, yet precious natural and national resource.

The Great Lakes are the largest reservoir of drinkable, navigable water in the world. They contain 20% of the world's surface fresh water supply--enough to cover the entire United States to a depth of eight feet. One out of 10 Americans derives his or her drinking water from the Great Lakes.

The Great Lakes also support an area that accounts for 25% of the annual national income of the United States. They provide 37 billion gallons of water per day for industrial processing. Industries in the region like manufacturing, shipping, farming, commercial fishing, tourism all depend heavily on water from the Great Lakes. The Soo Locks, which are located between the sister cities of Sault Ste. Marie, Michigan and Ontario, handle more than 100 million shipping tons per year, making them among the world's busiest waterways.

While water shortages threaten many parts of the nation, the midwest has in its midst the world's largest renewable agricultural water source. The Great Lakes provide 151 million gallons of water per day for irrigation purposes. In my home state of Michigan, for example, the Lakes help to create a climate allowing our farmers to produce a total of 50 commercial products--worth $20 billion in net income to Michigan farmers last year. (Michigan is the number one producer in the nation of five of these fifty products and fifth or higher for another 24.)

The Great Lakes also provide more than 3700 miles of U.S. shoreline that are used for swimming, boating, camping and other recreational purposes. Again using Michigan as an example, last year the attraction of its 2230 miles of Great Lakes shoreline helped to generate more than $9 billion in tourism revenue in the state.

The Great Lakes have also been among the most abused bodies of water in our country. Intensive industrial, agricultural and municipal uses have left a trail of pollution that we cannot ignore or wish away. While government and private efforts to clean up the Lakes have resulted in improvement, the problems which have plagued the Lakes during the past decades...toxic wastes, intergovernmental squabbles and neglect...still call for our attention and concern.

We need to strike a balance between the competing uses of the Great Lakes. A balance between the needs of the economic development necessary to preserve our current way of life and the need to protect Great Lakes water quality for our own good health and that of our children and our grandchildren. By implementing the Great Lakes Protection Act we can provide the framework necessary to provide this balance.

This morning we will be considering the provision of the Great Lakes Protection Act that designates the Great Lakes as a unique national resource and makes their protection and preservation a matter of national policy. As you may know, the Act currently has 27 cosponsors in the House of Representatives. I understand that the Chairman has agreed to hold further hearings early next year on the remaining two provisions of this legislation. These provisions deal with the need to establish better coordination among the 20 federal agencies or their subsidiaries that perform Great Lakes research and the need to better understand how proposed federal actions will effect the health of the Great Lakes.

The Chairman and Members of this Subcommittee learned first hand a valuable lesson about the prevailing attitude [illegible] the previous and the current administrations toward the Great Lakes in our work to prevent the closure of the Large Lakes Research Station at Grosse Ile, Michigan. We discovered that once we pointed out to the administration the impact that closing Grosse Ile--the only EPA facility to monitor Great Lakes water quality and its effect on human health--would have on 95% of our surface fresh water supply, the administration was willing to reconsider and then scrap plans to close the lab.

A November 22 New York *Times* headline "Reagan Budget Cuts Termed Threat to Great Lakes Clean Up Effort" tells us that our Great Lakes education effort must continue. This legislation, which makes the protection and preservation of the Great Lakes a matter of national policy, is designed to further this educational process. Once we achieve a shared awareness of the importance of the health of the Great Lakes to our national interest, our combined efforts to protect and preserve them can begin in earnest.

Mr. SCHEUER. Thank you very much for your fine statement, as well as your very long and deep commitment and work on behalf of the Great Lakes as part of our national heritage.

As you know, being one of the most active members of the majority in this committee—and I would state there is no majority member who has been more active and more contributing than the gentleman from Michigan—we have had a number of hearings on the problems of acid rain. In other words, manmade degradation of lakes, of forests, of grasslands, of croplands, of buildings. We have had a number of meetings with our Canadian friends, Members of the Canadian Parliament, on the impact of acid rain which affects the east coast, and the impact of acid rain on Canada. They have been deeply troubled and their economy has suffered grievous wounds from the problems of acid rain, at least half of it emanating from the United States. Now, of course, in addition to eight States, Canada also bounds the Great Lakes.

What role, if any, does the Great Lakes problem play in our relations with Canada? Are the Canadians concerned? Have they expressed any interest in the problem, your bill, perhaps?

Mr. BLANCHARD. Yes; as a matter of fact, I have talked with some Canadian officials, including the Minister of Environment, John Roberts, who has been here many times. You know him. He has been here more specifically to bring about a greater awareness on the part of the Congress and the administration with regard to the problem of acid rain.

Mr. SCHEUER. Yes, he has appeared before our subcommittee informally.

Mr. BLANCHARD. But needless to say, essentially Canadian officials responsible for environmental issues feel very strongly about preserving, protecting, and monitoring the water quality of the Great Lakes. This is the reason why we have a water quality agreement between the United States and Canada. There is an organization called the International Joint Commission which at least for budgetary purposes operates under the State Department here. It is composed of Canadian and United States members who monitor and work on issues relating to Great Lakes water quality.

As I understand it, the Great Lakes, in spite of themselves—and, of course, you can never say that on environmental issues—but by themselves do not have an acid rain problem because of the limestone buffering. But smaller lakes nearby, especially in Ontario and in upstate New York, and I am hearing this morning other places, including Michigan, do have serious acid rain problems. I think it is one of those issues where the more awareness we can create about the issue, the better chance we have of doing something about it. The problem you have is that the Province of Ontario and the lakes in upstate New York are not exactly on the tips of the tongues of Members of Congress or Governors or officials who might be from California, Florida, or Kentucky. Anything we can do to create a greater awareness of these environmental problems I think will be beneficial, not only to the water quality of lakes threatened or killed by acid rain, but will be a great contribution to our relations with Canada, an ally to our north that oftentimes we have taken for granted.

Mr. SCHEUER. One last question before I yield to my colleagues. You spoke of a greater ongoing scrutiny over economic and other activities affecting the Great Lakes. How would this affect the economy of the region? How will this scrutiny and the conclusions and the policies that might result from this scrutiny affect the viability of the fabric of business in the Great Lakes region?

Mr. BLANCHARD. Well, it is hard to say in a specific sense at this point. My guess is the more awareness we have, the more ongoing research we have that is coordinated, the easier it should be to resolve any decisions that have to be made regarding what you're going to allow and not allow in the Great Lakes.

As you know, we are having a terrible time these last few decades making decisions on anything, and once you make them and making them stick—you know, in Congress we seem to vote on the same questions every year, sometimes every 6 months, and cannot seem to resolve these problems. There is so much sloganeering going on with regard to environmental issues that so many important matters become so polarized so soon you can't resolve anything. So I think probably this legislation could be important to underscore the need for continued surveillance of the Great Lakes in terms of research, No. 1, at a time when many people want to see the Federal Government disengage from such research. I think we are going to need more information in the years ahead just so we don't overstep reasonable boundaries in terms of economic development, because once you seriously damage these lakes, they're not like rivers and they don't just flush themselves out.

Again, I think we're going to have some witnesses, Mr. Chairman, who can talk about this directly, because as I understand it, we have lined up witnesses that are not only looking at it from a tourist or environmental point of view but from an economic development point of view and from an industrial point of view. The important thing to remember is that the Great Lakes have never been viewed as a unique national resource, and they should be, worthy of the greatest of protection that our country can——

Mr. SCHEUER. Well, under your leadership, you have made it very clear that we should perceive the Great Lakes as a national resource both from the point of view of recreation and tourism, as well as a resource that vastly feeds the regional economy and the American economy.

I think you have had a major impact on the perception of the Congress, of what the Great Lakes is all about. I think we owe you a debt of gratitude for that.

I would like to yield to my colleague.

Mr. **Carney**. Thank you very much, Mr. Chairman.

I'm not going to ask any questions of you, Jim. I think you gave us a good picture of the Great Lakes. We have a list of many witnesses here who could talk to the specifics. I again, would like to commend you for bringing this legislation to this committee and hopefully this committee can do its job and get it through the full committee, on the floor of the House, and enacted into public law, so we can protect that natural resource that is so important to us.

I will relinquish my time back to the Chair and look forward to your other witnesses. Thank you.

Mr. **Scheuer**. Congressman Lundine of New York.

Mr. **Lundine**. I have cosponsored your bill because I believe that considerable progress can be made in the area of improving the quality of the Great Lakes and I feel it has not received the concerned attention that these bright resources deserve.

That is based on a couple of observations. First of all, I think the Canadians have paid more attention to the combination of the environmental quality and the resource that these lakes provide than we have. I am obviously more familiar with Lake Erie than any other, and I think they have gotten more benefit out of it.

For example, to take a matter that is rather controversial in my area, we have been arguing for 15 years about whether we could drill for gas in Lake Erie; meanwhile, the Canadians have been drilling gas out of Lake Erie for 15 years with no apparent adverse environmental consequences.

Secondly, particularly in Lake Erie, I have seen what concentrated environmental quality can do. You could not swim or use Lake Erie in my area, or the entire area, from Cleveland to Buffalo, several years ago, and today it is cleaned up. So results can be achieved within a reasonable timeframe.

But one controversial aspect that I think not only affects that lake but others is the level of the lake. I wonder if you have any knowledge as to whether or not man is interfering with or somehow controlling the level of the Great Lakes, particularly Lake Erie.

Mr. **Blanchard**. I think we should allow our other witnesses to address that issue, Stan. This is one area where their expertise will be helpful to me.

Mr. **Lundine**. Well, I come from a rural area, as you know, and there is a saying in the area that "Nothing much happens in a small town, but what you hear makes up for it." I feel as though maybe nothing much is happening with man's control over Lake Erie and the other Great Lakes, but you sure hear a lot that tends to make up for it.

I appreciate your reluctance to answer if you don't have detailed knowledge——

Mr. **Blanchard**. What was your question again, Stan? I was distracted.

Mr. **Lundine**. Well, my question is, is it a fact that a manmade decision has been implemented to raise or lower the level of the lakes?

Mr. **Blanchard**. Several years ago the water level was in many areas a controversial issue, especially among those who lived right immediately along the lakes. As I recall, there were discussions that there were decisions which could raise or lower the lakes. I remember that former Congressman O'Hara from Mt. Clemens, Mich., was heavily involved in that issue.

I think we should ask our witnesses here who will be in the best position to know what is fact and what is fiction on that question. Since each time a lake level is raised or lowered someone is harmed and someone else is helped, this issue will always be a controversial one.

Mr. **Lundine**. Right.

You understand that we all serve on more than one committee and I'm not going to be able to be here for the entire morning. I hope you will pursue that with the people who do have the expertise.

Thank you, Mr. Chairman, and thank you for inviting me to join in these important set of hearings.

Mr. **Scheuer**. Thank you, Congressman Lundine. This hearing wouldn't have been a proper hearing unless a New York representative testified on the importance of the Great Lakes to us, too, because we do border the Great Lakes.

Congressman Weber.

Mr. **Weber**. Thank you, Mr. Chairman. It is a great pleasure for me to be here today. I realize this is only the first of several hearings on this subject, and primarily I guess we are going to be discussing the Great Lakes today.

But, Congressman, can you give us a little bit of an overview, a peek at what your bill would do to coordinate the 20 Federal agencies or subsidiaries that you mentioned that are now performing research on the Great Lakes?

In this day and age we are all interested in reducing bureaucracy and not creating more of it. Can you give us a peek at the objectives of your bill in this regard?

Mr. **Blanchard**. Sure. The bill does essentially three things. One, it declares the Great Lakes a unique national resource, as I mentioned. Second, it would create a Great Lakes office. The bill puts that office within the National Oceanic and Atmospheric Administration, such office to coordinate all the different Federal programs and research programs directed at the lakes.

Third, it would require an impact statement that would have to be attached to any proposed Federal activity that might affect the lakes.

The Great Lakes office, which would be set up within NOAA—and we just picked that; there could be a better agency, in which to locate it, quite honestly. There are so many agencies. There's about ten Federal agencies that are—there's even more than that. If you take State and Federal, you're up to about 20 different entities having an activity that affects the Great Lakes. But the Great Lakes office would inventory what is going on and try to better coordinate it.

What we have had, for example, just in the area of research, is an unbelievable number of different Great Lakes research projects. I'm looking at a list right now prepared a year ago which would include a large number of different universities and facilities doing research we found including EPA and NOAA and the Department of Interior, the State of Michigan's Department of Natural Resources, on and on, that there is a lack of coordination.

I think in a year of tight budgets we're going to have to be very careful about what we do away with and what we don't.

Mr. **Weber**. Do you think your bill would help to avoid duplication of effort in this respect?

Mr. **Blanchard**. I think so, absolutely. I think that is one of the major arguments for the bill. And at some point we are going to be hearing from EPA and NOAA and some of the agencies involved on that point.

Mr. **Weber**. Thank you very much, Mr. Chairman.

Mr. **Scheuer**. Does that complete your testimony, Mr. Blanchard?

Mr. **Blanchard**. Yes, Mr. Chairman. As I said, we have some very distinguished witnesses that we should hear from.

Mr. **Scheuer**. Let's get to the witnesses, then. I would invite you to come up and sit here and help us interrogate the witnesses. We would be very honored to have you.

Mr. **Blanchard**. Thank you, Mr. Chairman.

Mr. **Scheuer**. Our first witness, then, will be a panel. We would invite the three of you to step up to the table. Mr. Len Barnes, representing the AAA Motor News of Dearborn, Mich., Dr. Paul Eisele, administrator of water quality and land use programs of the Detroit Edison Co., and Representative Thomas Anderson of the Michigan State Legislature.

We are very happy to have the three of you here, and we will take you in the order in which I announced you. We suggest that each of you speak for approximately 5 minutes, informally, just chat with us as you would if we were all in your living room.

The testimony of each of you will be printed in its entirety at the point in which you begin to testify. All of your written testimony will be permanently recorded in the printed record of this hearing. Let's start out with Mr. Len Barnes and please take your 5 minutes. Then we will go to the other members of the panel, and will ask all of you some questions.

STATEMENTS OF LEN BARNES, EDITOR, AAA MICHIGAN LIVING MAGAZINE; PAUL EISELE, ADMINISTRATOR OF WATER QUALITY AND LAND USE PROGRAMS, ENVIRONMENTAL AFFAIRS DEPARTMENT, DETROIT EDISON CO.; AND REPRESENTATIVE THOMAS J. ANDERSON, MICHIGAN STATE LEGISLATURE

Mr. **Barnes**. I have been asked by Representative James Blanchard to comment on the importance to tourism and recreation of preserving the Great Lakes and keeping our waters clean.

The overwhelming importance of the Great Lakes to Michigan's economy, shipping, commerce and energy future, plus tourism, was dramatically demonstrated by the early French explorers Radisson and Groseilliers, Father Marquette and the Hudson Bay Trading

Co., which established its first outpost on Mackinac Island. They all arrived by canoe and they got their drinking water by dipping into the Great Lakes, food by hook and line, their shelter and fire in the forests bordering the lakes. Also, Longfellow wrote his Hiawatha about the world's largest body of fresh water, Lake Superior.

Tourism today is the No. 2 industry in Michigan, second only to auto production, even when auto production is booming. Last year tourism brought $9 billion to Michigan's economy which ranks our State sixth in the Nation. It resulted in $425 million in taxes which went to the State general fund, reducing the State taxes of its citizens. Tourism employs directly 249,000 persons, many of whom are unskilled and might otherwise be jobless. Best of all, it is the only sector of Michigan's economy which has continued to grow even during the 1973 recession and today's dark times in Michigan.

If a line were drawn from Bay City to Muskegon and there was no tourism, almost all who live north of that line would be unemployed or have severely curtailed incomes. If a line were drawn 2 miles inland along the length of Lake Michigan's eastern shore, and Lake Huron's western shore, and there were no tourism, probably 80 percent of the residents within the 2-mile band would be out of work.

Having indicated the importance of tourism to our economy, let us put the influence of fresh, clean water in the Great Lakes and tourism in perspective. In 1975 a survey by Market Opinion Research Corp. revealed that water and access to water-related activities, including boating, fishing and beaches, is the largest single appeal Michigan has for vacationers and prospective vacationers.

Mr. Scheuer. Would the witness suspend for a moment, please. I see Congressman Dennis Hertel back there. Would you come up here and join us, Congressman?

Please proceed.

Mr. Barnes. I would conclude that this is true for Wisconsin and Minnesota, but particularly for Michigan. Michigan has more fresh water shoreline than any other State. It's 3,200 miles of Great Lakes shoreline are more than the entire Atlantic Coast, or more than the entire State of Florida has in ocean shore. 25.8 percent of all boaters registered in the U.S. are in the Great Lakes area, and 20.8 percent of them are registered in Michigan. With 735,000 boats registered, Michigan is second in the country. Michigan sells 1.6 million fishing licenses a year—that's the second highest in the country—and 35 percent of Michigan's fishing is on the Great Lakes. I have put into the record the importance of the total economic value of the Great Lakes sportsfishery, $440 million a year, and it is well known that until 1967 there was very little fishing on the Great Lakes, particularly in Lake Michigan, because there weren't any fish worth catching there until the salmon came in. At that time the hotels, motels and restaurants along northern Michigan closed right after Labor Day. Today they stay open through November because of this. And besides salmon, steelhead trout make spring and fall runs out of the Great Lakes into streams in Michigan.

It would be impossible to calculate in dollars the enjoyment and improved health anglers receive from being outdoors catching salmon off Chicago's docks and shores in winter, and off shores, jetties, breakwaters and on boats as the salmon progress north along Lake Michigan and Lake Huron through the summer into the rivers to spawn.

Were it not for the clean waters of the Great Lakes and the improving water quality of Michigan streams draining into them, residents of Grand Rapids would not be able in fall to catch salmon in the Grand River in front of President Ford's library right downtown. And for the first time this fall, salmon have been caught in the shadows of Michigan's capital in Lansing, 100 miles from Lake Michigan. More each year are being caught inside of downtown Detroit's skyscrapers in the Detroit River. Great Lakes fishermen in Michigan enjoyed 7.5 million angler days on average from 1975 through 1979.

On a trip around the world in 1975 to invite foreigners to come to our U.S. Bicentennial celebrations, I interviewed tourism promoters and travel editors. The single tourism attraction most often asked about was fishing for salmon in the Great Lakes, particularly by the Japanese.

It is impossible to calculate the economic impact exactly in terms of dollars of the Great Lakes on those who own various things which have to do with tourism, but I have reports from the heads of three Michigan tourist areas which border on our Great Lakes, and I will just summarize them very briefly:

Tourism contributed more than $406 million to the economy of Michigan's UP in 1980. Over 1,100 miles of Great Lakes shoreline play a key role in this. The Great Lakes almost completely surround the UP and are the foundation upon which its tourist industry is based, dependent on good water quality for continued growth. Over 9,000 jobs in the UP can be directly attributed to the tourist industry, with thousands more indirectly. It is one of UP's largest employers and it doesn't have many such even in prospect.

Two billion dollars of Michigan's tourism share comes to West Michigan and its main selling point is its Lake Michigan beaches. The only commodity West Michigan has which does not wear out is its Lake Michigan shoreline.

Lake Huron is the number one natural resource for a $1 billion tourist industry for east Michigan's 26 counties. It has 400 miles of shoreline. Every town and village from Harbor Beach north has tourism as its major industry, except Bay City and Alpena. A polluted Great Lakes would impact this industry by a loss of two-thirds of east Michigan tourism sales or $650 million, with a loss of more than 20,000 jobs.

Grand Hotel on Mackinac Island is grand, but if it sat surrounded by farmland, its appeal would be considerably diminished. Mackinac County is dependent almost entirely on world-famed Mackinac Island which generated $150 million in economic activity last year.

Dan Musser runs Grand Hotel and is chairman of the Michigan Travel Commission. He reports that 2,500 persons are tourism employed for 4 months a year, and 1,500 for 6 months on Mackinac Island, with $25 million in sales generated by tourism. If the Great Lakes were badly polluted or not there, Musser would not be investing $1 million in Grand Hotel's renovation this year on top of $5 million in 1980–81.

Any major act affecting the Great Lakes would have an important effect on Michigan tourism. Before anything is done to lengthen the shipping season, we must know what effect this would have on the Great Lakes fishery and its shoreline. I know only too well what raising the level of the Great Lakes has done over the last 10 years. I have spent at least $10,000 on seawalls to protect my home at Sleeping Bear Dunes. Of course, the Federal Government has spent almost $80 million on the Sleeping Bear Dunes National Lakeshore already, and many millions more on Pictured Rocks National Lakeshore. These investments of taxpayers' dollars could be wiped out by careless manipulation of the Lakes.

Based on my research for this testimony, if the Great Lakes were polluted badly or destroyed, Michigan's vacation pleasure market, exclusive of conventions, will be cut by two-thirds. At least 125,000 persons would have to seek other employment, of which there is a minimum in Michigan today. Revenue generated by tourism would shrink to $4.5 billion, and tax revenue to the general fund would be cut to $200 million.

I agree with a Detroit News editorial of November 30—which I have attached to my testimony—which says:

> The Great Lakes Protection Act proposed by Michigan Congressman James Blanchard deserves expeditious approval . . . it offers better value for money spent . . .

Michigan's auto license plates say it all—Great Lake State. And Michigan's slogan "Water Wonderland" means the Great Lakes.

I am personally pleased this amendment in the bill would add no extra cost to our already very large Government, and yet do a needed job. I would like to thank you for the opportunity of giving these remarks.

[The prepared statement of Mr. Barnes follows:]

NATURAL RESOURCES AND ENVIRONMENT SUB-COMMITTEE
OF THE
COMMITTEE ON SCIENCE AND TECHNOLOGY, U.S. HOUSE OF REPRESENTATIVES

STATEMENT ON H.R. 3600, THE GREAT LAKES PROTECTION ACT--DEC. 15, 1981

By Len Barnes, Editor, AAA Michigan Living Magazine

Chairman Scheur, Honored U.S. Representatives, ladies and gentlemen:

I am Len Barnes. I have been asked by Representative James Blanchard to comment on the importance to tourism and recreation of preserving the Great Lakes and keeping their waters clean.

I have been travel editor of AAA Michigan Living magazine covering the State of Michigan for 35 years. I have been on the Michigan Travel Commission for six years, one year as its chairman. I served on Governor George Romney's Committee on Clean Waters and Quality Recreation which successfully persuaded Michigan voters to approve a $350 million bond issue on clean water in 1968. I have a summer home on Lake Michigan and grew up in northern Michigan. So I have a personal knowledge of Michigan's share of the Great Lakes and of what they mean in tourism and recreation.

The overwhelming importance of the Great Lakes to Michigan's economy, shipping, commerce and energy future plus tourism was dramatically demonstrated by the early French explorers Radisson and Groseilliers, Father Marquette, and the Hudson Bay Trading Co. which established its first outpost on Mackinac Island. They all arrived by canoe, and they got their drinking water by dipping into the Great Lakes, food by hook and line, their shelter and fire in the forests bordering the lakes. Longfellow wrote his Hiawatha about the world's largest body of fresh water, Lake Superior, when he said, "By the shores of Gitche Gumee, By the shining Big-Sea water, Stood the wigwam of Nokomis," and so on. The facts which follow are footnoted as to source.

Tourism today is number two industry in Michigan, second only to auto production even when auto production is booming. Last year tourism brought $9 billion to Michigan's economy which ranks our state sixth in the nation.[1] It resulted in $425 million in taxes which went to the state general fund, reducing the state taxes of its citizens.[2] It employs directly 249,000 persons,[3] many of whom are unskilled and might otherwise be jobless. Best of all, it is the only sector of Michigan's economy which has continued to grow even during the 1973 recession and today's dark times in Michigan.

If a line were draw from Bay City to Muskegon and there was no tourism, almost all who live north of that line would be unemployed or have severely curtailed incomes. If a line were drawn two miles inland along the length of Lake Michigan's eastern shore and Lake Huron's western shore, and there were no tourism, probably 80 percent of the residents along the shore would be out of work.[4]

Having indicated the importance of tourism to Michigan's economy, let us put the influence of fresh, clean water in the Great Lakes on tourism in perspective. In 1975, a survey by Market Opinion Research Corporation revealed that water and access to water-related activities including boating, fishing and beaches, is the largest single appeal Michigan has for vacationers and prospective vacationers. I'd conclude that this is true also for Wisconsin and Minnesota, but particularly so for Michigan. Michigan has more fresh water shoreline than any other state. Its 3,200 miles of Great Lakes shoreline are more than the entire Atlantic Coast, or than the entire State of Florida has in ocean shore. Twenty-five and eight-tenths percent of all boats registered in the U.S. are in the Great Lakes area, and 20.8 percent of them are registered in Michigan.[5] With 735,000 boats registered, Michigan is second in the country.[6] Michigan sells 1.6 million fishing licenses a year, second highest in the country and 35 percent of Michigan's fishing is on the Great Lakes.[7] Total economic value of the Great Lakes sports fishery, not including commercial fishing on which many make their livings, is $440 million a year.[8] Until 1967 on Labor Day weekend when coho and chinook salmon as large as 35 pounds began to appear around Lake Michigan stream mouths in northwest Michigan, there had been no substantial Great Lakes sports fishery since before World War 2. Northern Michigan resorts, motels and many restaurants closed day after Labor Day. Since then, most of them stay open into November, employing thousands, keeping campgrounds along Lake Michigan and Lake Huron coho coasts open. Michigan's salmon sports fishery alone brings in $200 million a year, including charter costs, gas, fishing gear, motels rented, food consumed, etc.[9] Beside salmon, steelhead trout make spring and fall runs out of the Great Lakes into streams in Michigan. Brown trout as large as 20 pounds have appeared along Michigan's thumb and up as far as Alpena in recent years, bringing fishing derbies and money to these always-depressed areas.

It would be impossible to calculate in dollars the enjoyment and improved health anglers receive from being outdoors catching salmon, off Chicago's docks and shores in winter, and off shores, jetties, breakwaters and on boats and by wading fishermen as the salmon progress north along Lakes Michigan and Huron through the summer, into rivers in fall to spawn. Were it not for the clean waters of the Great Lakes and the improving water quality of Michigan streams draining into them, residents of Grand Rapids would not be able in fall to catch salmon in the Grand River in front of President Ford's library right downtown. And for the first time this fall, salmon have been caught in the shadows of Michigan's capitol in Lansing, 100 miles from Lake Michigan. More each year are being caught in sight of downtown Detroit's skyscrapers in the Detroit River. Great Lakes fisherman in Michigan enjoyed 7.5 million angler days on average from 1975 through 1979.[10]

On a trip around the world in 1975 to invite foreigners to come to our U.S. Bicentennial celebrations, I interviewed tourism promoters and travel editors. The single tourism attraction most often asked about was fishing for salmon in the Great Lakes, followed by shooting moose and bears in Ontario.

It is impossible to calculate the economic impact exactly in dollars of the Great Lakes on those who own campgrounds or motels on their shores or on those who live along them. But I have reports from the heads of three Michigan Tourist areas which border one or more Great Lakes. Here's a summary:

- Tourism contributed more than $406 million to the economy of Michigan's Upper Peninsula in 1980. Over 1,100 miles of Great Lakes shoreline play a key role. Shoreline campgrounds, resorts, beach facilities, harbors, fishing sites, waterfront hiking trails attract visitors from the world. The Great Lakes almost completely surround the U.P. and are the foundation upon which its tourist industry is based, dependent on good water quality for continued growth.[11] Over 9,000 jobs in the U.P. can be directly attributed to the tourist industry, with thousands more indirectly due to it. Tourism is one of the U.P.'s largest employers, and the U.P. doesn't have many such even in prospect.[12]

- Two billion dollars of Michigan's tourism share comes to West Michigan, and its main selling point is its Lake Michigan beaches. Almost every community along Lake Michigan's eastern shoreline, from Indiana border north to Mackinaw City, is a resort community. Even industrial Muskegon has 1,200 campsites within its city limits. Ships cross Lake Michigan from two West Michigan ports, carrying autos whose owners otherwise might not venture into the state, giving many their only experience of being out of sight of land. The one commodity West Michigan has which does not wear out is its Lake Michigan shoreline, which results in thousands of jobs from accountants and builders to dishwashers.[13]

- Lake Huron is the number one natural resource for a $1 billion tourist industry for East Michigan's 26 counties. It has 400 miles of shoreline and every town and village from Harbor Beach north has tourism as its major industry except Bay City and Alpena. A polluted Great Lakes would impact this industry by a loss of two thirds of East Michigan tourism sales a year, or $650 million, with a loss of more than 20,000 jobs.[14]

- Grand Hotel on Mackinac Island is grand indeed, but if it sat surrounded by farmland, its appeal would be considerably diminished. Mackinac County is dependent almost entirely on world-famed Mackinac Island for its livelihood which generated $115 million in economic activity in 1980.[15]

Dan Musser runs Grand Hotel and is chairman of the Michigan Travel Commission. He reports that 2,500 persons are tourism-employed for four months a year, and 1,500 for six months on Mackinac Island, with $25 million in sales generated by tourism. If the Great Lakes were polluted, or not there, Musser would not be investing $1 million in Grand Hotel's renovation on top of $5 million in 1980 and 1981.

Any major act affecting the Great Lakes would have an important effect on Michigan tourism. Before anything is done, for instance, to lengthen the shipping season, we must know what effect this would have on the Great Lakes fishery and its shoreline. I know only too well what manipulation of Lake Michigan water level can do to tourism. Over the last 10 years, I've spent at least $10,000 on seawalls and groins to protect my home in the Sleeping Bear Dunes from high water which many suspect is due to manipulation of water levels to aid shipping.

The Federal Government has spent almost $80 million on the Sleeping Bear Dunes National Lakeshore in northwest Michigan and many millions more on Pictured Rocks National Lakeshore in Lake Superior. These investments of taxpayer dollars could be wiped out by careless manipulation of the lakes, or any major change in their ecology.

Michigan Travel Bureau Director Jack Wilson says, and I quote: "Water resources, particularly our Great Lakes with their ever-improving water quality, play a critical role in defining Michigan's image as a travel destination. Additionally, the resources also lead directly to specific expenditures from among numerous travel segments in different forms of recreation. Water is a catalyst to attract, as well as--to resort to a pun--extract dollars, of course." End quote.

Based on my research for this testimony, if the Great Lakes were polluted badly or destroyed, Michigan's vacation pleasure market, exclusive of conventions, would be cut by two-thirds. At least 125,000 persons would have to seek other employment, of which there is a minimum in Michigan today. Revenue generated by tourism would shrink to $4.5 billion, and tax revenue to the general fund would be cut to $200 million.

I agree with a Detroit News editorial of November 30 which says and I quote: "The Great Lakes Protection Act proposed by Michigan Congressman James Blanchard deserves expeditious approval by the House Natural Resources and Environment subcommittee...it offers better value for money spent..." End quote. I attach to this presentation a copy of the editorial.

Michigan's auto license plates say it all--Great Lake State. And Michigan's slogan Water Wonderland means the Great Lakes. We in tourism know how important the clean waters and beautiful beaches of our Great Lakes. We applaud Congressmen Blanchard and Scheur and all members of your committee for giving us a chance to put their value in perspective. Thank you.

The Detroit News
MICHIGAN'S LARGEST NEWSPAPER
November 30, 1981
109th YEAR NO. 100

Our Opinions

Protecting the Great Lakes

The Great Lakes Protection Act proposed by Michigan Congressman James Blanchard deserves expeditious approval by the House Natural Resources and Environment subcommittee.

Mr. Blanchard, in rewriting the 1978 National Ocean Pollution Planning Act, is giving it both a new title and a widened scope to guard and upgrade the water quality of the Great Lakes.

The bill, which offers taxpayers better value for money spent on inland water research by eliminating the problem of overlapping programs, would create a Great Lakes executive office to supervise and coordinate research, using funds already committed under the old law.

At present, seven government departments and three agencies have their oars in Great Lakes waters. They fund research programs in the laboratories of 20 universities, with little or no coordination among them.

Labs of the Environmental Protection Agency (EPA), for instance, concentrate on acid rain, toxic substances, and water pollution. The Department of Agriculture is working on acid rain and fertilizer runoff. The National Science Foundation studies toxic chemicals in the Lakes. The National Oceanic and Atmosphere Administration of the Commerce Department checks water quality, as does the Fish and Wildlife Service at Interior. The Office of Sea Grants at Commerce doles out research money to universities. So does the National Science Foundation. The Defense Department has the Army Corps of Engineers and the Navy working on research programs. The Coast Guard, under the Department of Transportation, also conducts research. The Department of Energy studies the impact of utilities on lake water temperatures, a question that also interests the EPA.

Mr. Blanchard, you will remember, fought successfully for funds to operate the Large Lakes Research Laboratory on Grosse Ile when proposed cuts threatened the only facility established to monitor the effects of pollution on human health.

The Great Lakes represent a key to Michigan's future economic growth. The state borders 95 percent of the nation's fresh water. The lakes provide drinking water, transportation, and recreation for 37 million people. They support an area that contributes 25 percent of the nation's income. Industry alone takes 37 billion gallons of water a day from the Great Lakes.

The Lakes are a treasure worth protecting. The Blanchard proposal would help guarantee that protection by sharply reducing the confusion caused by redundant efforts, and it would save plenty of taxpayer money in the bargain.

Mr. **Blanchard** [presiding]. Thank you very much, Len.

I might add that Len Barnes, who we just heard from, is the travel editor of the AAA Michigan Living Magazine. He is a noted authority on travel and tourism, not just in Michigan but elsewhere, and has served as chairman of the Michigan Travel Commission, and also as a member of the Romney Committee on Clean Waters. That must have been a few years back.

Mr. **Barnes**. In 1968, yes, sir.

Mr. **Blanchard**. But he is an institution in Michigan and we are pleased to have him here today.

Before we go to questions, why don't we turn to our next witness, Dr. Paul Eisele, who is administrator of water quality and land use programs with the Detroit Edison Co. That is the major electrical utility in Michigan, and the only one in southeast Michigan. Dr. Eisele.

Dr. **Eisele**. Congressman, ladies and gentlemen, I am Dr. Paul Eisele, administrator of water quality and land use programs in the Environmental Affairs Department of the Detroit Edison Co.

I have served as an industrial member of Michigan's advisory task force setting State water quality standards and am presently chairman of the Michigan Coalition for Clean Water, a coalition of municipalities, industry organizations, and trade groups addressing water quality issues. I am here today, however, representing the Detroit Edison Co.

Detroit Edison desires to convey its support for the philosophy expressed in the Great Lakes Protection Act, H.R. 3600, which provides special recognition of the Great Lakes as a unique resource of this Nation.

The Great Lakes contain 20 percent of all freshwater in the world, with a vast surface area of over 95,000 square miles and a total volume of 5,000 cubic miles. The world's greatest rivers, by comparison, contain only 2 percent of the world's freshwater.

The Great Lakes support almost 40 million people in the United States and Canada as the supply of drinking water and for industrial, recreational, and other uses. As one who is all too familiar with Michigan winters, I can assure you that it is not our balmy climate which has attracted such a large population to the Great Lakes region. The attraction is the lakes themselves, because of their many uses. The Great Lakes have always been an important means of transportation. The lakes first opened the wilderness to the early explorers, trappers, and settlers. They facilitated early commerce, and continue to do so. Today, the tonnage that passes through the straits at Sault Ste. Marie equals two-thirds that which travels through the Panama Canal.

But the water not only transports goods; it also helps to produce them. Water is a vital raw material in many industrial processes, and the abundance of water in the Great Lakes region was a factor in the development of the area's many industrial centers. A noninterruptible supply of clean water is especially critical for the electric power industry—that's my industry.

Electrical generation accounts for 80 percent of the Great Lakes industrial water usage. Detroit Edison provides electricity to almost 5 million residents of the Great Lakes region, in addition to a massive industrial/commercial complex.

Over 90 percent of Detroit Edison's electricity is generated by coal. To produce electricity in a conventional coal-fired steam electric powerplant with open cycle cooling, which is our typical plant, the company requires 13 tons of air and 44 tons of water for each ton of coal it burns. In essence, the water is just as much a raw material as the coal, except that it is recycled back to the water body, often in better condition than when it was withdrawn. Since most of our coal arrives by lake freighter, the Great Lakes serve the company and many industries as both a raw material and a means of transportation.

A nuclear powerplant uses less tonnage of fuel and air than a similarly sized coal-fired plant, since its energy is not based on combustion. But it would still use the same quantity of water, if not more. Hydroelectric plants, such as those at Sault Ste. Marie or Niagara Falls, do not rely on fuel at all, and so their only raw material is water.

The value of water for electical production is obvious, with approximately 100 steam electric powerplants—that's including the United States and Canadian plants—located on the Great Lakes. Another 20 plants are under construction or near completion. Of these plants, 86 percent use once-through cooling, borrowing a total volume equal to 30 percent of the flow of the St. Lawrence River. I emphasize the term "borrowing" to underscore the fact that despite this tremendous degree of water usage, it is not a consumptive use nor is it polluting. On the contrary, water reuse systems such as closed cycle cooling systems are consumptive as well as extremely expensive.

Detroit Edison appreciates the recognition of the Great Lakes as a unique and precious natural resource of this region. The company hopes to be successful in its advertising campaigns which emphasize the availability of electricity plus other southeastern Michigan strong points, such as water. The "Energy Plus" campaign, which was attached to the testimony, you may have seen in national magazines. It is part of our continued revitalization plan for southeastern Michigan which we, Detroit Edison, are vigorously supporting.

House bill 3600 could facilitate this reindustrialization if it is reasonably interpreted and implemented by its responsible agency. The company is optimistic that this act will provide the vehicle for Great Lakes industry and regulatory agencies to work together toward common goals, and that it will not impose burdensome, redundant impact reviews upon water users.

The designation of an administrator to coordinate the research activities of other agencies will be beneficial. This will insure that the sometimes seemingly disparate research activities are in the best interest of the Great Lakes as the multiuse resource they are.

In summary, I would like to reiterate the many uses of our valuable resource, the Great Lakes. I recognize the need for the Great Lakes to produce electricity. My wife values our bountiful clean drinking water supply. My neighbor enjoys Great Lakes fishing. Another neighbor values the Great Lakes for sailing and water transportation, and my children for swimming and recreation. My parents value the industrial use of the lakes in providing jobs. All these values are correctly assigned and should be protected and encouraged.

The Detroit Edison Co. supports the objectives of H.R. 3600 to recognize and protect the Great Lakes as a unique resource of this nation.

Thank you.

[The prepared statement of Dr. Eisele follows:]

STATEMENT OF DR. PAUL EISELE ON BEHALF OF THE
DETROIT EDISON COMPANY
REGARDING H.R. 3600
THE GREAT LAKES PROTECTION ACT
BEFORE THE SUB-COMMITTEE ON NATURAL RESOURCES AND ENVIRONMENT
DECEMBER 15, 1981

Congressmen, Ladies & Gentlemen:

I am Dr. Paul J. Eisele, Administrator of Water Quality and Land Use Programs in the Environmental Affairs Department of the Detroit Edison Company. I have served as an industrial member of Michigan's Advisory Task Force setting State water quality standards and am presently chairman of the Michigan Coalition for Clean Water, a coalition of municipalities, industry organizations, and trade groups addressing water quality issues. I am here today, however, representing the Detroit Edison Company.

Detroit Edison desires to convey its support for the philosophy expressed in the Great Lakes Protection Act, H.R. 3600, which provides special recognition of the Great Lakes as a unique resource of this nation. The Great Lakes contain 20% of all fresh water in the world, with a vast surface area of 25,000 square miles and a total volume of 5,000 cubic miles. The world's great rivers, by comparison, contain only 2% of the world's fresh water. The Great Lakes support almost 40 million people in the U.S. and Canada as the supply of drinking water and for industrial, recreational and other uses. As one who is all too familiar with Michigan winters, I can assure you that it is not our balmy climate which has attracted such a large population to the Great Lakes region. The attraction is the lake themselves, because of their many uses. The Great Lakes have always been an important means of transportation. The lakes first opened the wilderness to the early explorers, trappers and settlers. They facilitated early commerce, and continue to do so. Today, the tonnage that passes through the straits at Sault Ste. Marie equals two-thirds that which travels through the Panama Canal.

But the water not only transports goods, it also helps to produce them. Water is a vital raw material in many industrial processes, and the abundance of water in the Great Lakes region was a factor in the development of the area's many industrial centers. A non-interruptible supply of clean water is especially critical for the electric power industry. Electrical generation accounts for 80% of the Great Lakes industrial water usage. Detroit Edison provides electricity to almost five million residents of the Great Lakes region, in addition to a massive industrial/commercial complex. Over 90% of Detroit Edison's electricity is generated by coal. To produce electricity in a conventional coal-fired steam electric plant with open cycle cooling (our typical plant) the Company requires 13 tons of air and 44 tons of water for each ton of coal it burns. In essence, the water is just as much a raw material as the coal, except it is recycled back to the water body, often in better condition than when it was withdrawn. Since most of our coal arrives by lake freighter, the Great Lakes serve the Company and many industries as both a raw material and a means of transportation.

A nuclear plant uses less tonnage of fuel and air than a similarly sized coal-fired plant, since its energy is not based on combustion. But it would still use the same quantity of water, if not more. Hydroelectric plants, such as those at Sault Ste. Marie or Niagara Falls, do not rely on fuel at all, and so their only raw material is water. The value of water for electrical production is obvious, with approximately 100 steam electric power plants (U.S. and Canadian) located on the Great Lakes. Another 20 plants are under construction or near completion. Of these plants, 86% use once-through cooling, borrowing a total volume equal to 30% of the flow of the St. Lawrence River. I emphasize the term "borrowing" to underscore the fact that despite this tremendous degree of water usage, it is not consumptive or polluting. On the contrary, water reuse systems, such as closed cycle cooling systems, are consumptive as well as extremely expensive.

Detroit Edison appreciates the recognition of the Great Lakes as a unique and precious natural resource of this region. The Company hopes to be successful in its advertising campaigns which emphasize the availability of electricity plus other southeastern Michigan strong points, such as water. The "Energy...plus Water" campaign is part of a continued revitalization plan for southeastern Michigan which Detroit Edison is vigorously supporting.

H.R. 3600 could facilitate this reindustrialization if it is reasonably interpreted and implemented by its responsible agency. The Company is optimistic that this Act will provide the vehicle for Great Lakes industry and regulatory agencies to work together toward common goals, and that it will not impose burdensome, redundant impact reviews upon water users.

The designation of an administrator to coordinate the research activities of other agencies will be beneficial. This will insure that the sometimes seemingly disparate research activities are in the best interest of the Great Lakes as the multi-use resource they are.

In summary, I would like to reiterate the many uses of our valuable resource,the Great Lakes. I recognize the need for the Great Lakes to produce electricity. My wife values our bountiful clean drinking water supply. My neighbor enjoys Great Lakes fishing. Another neighbor values the Great Lakes for sailing and water transportation, my children for swimming and recreation. My parents value the industrial use of the lakes in providing jobs. All these values are correctly assigned, and should be protected and encouraged.

The Detroit Edison Company supports the objectives of H.R. 3600 to recognize and protect the Great Lakes as a unique resource of this nation.

ENERGY PLUS⁺

⁺ Oceans of fresh water...shrewd reasons for locating in Southeastern Michigan.

Industry needs plenty of water and energy for processing and in the production of most products.

Southeastern Michigan has both in great quantities.

Its shoreline stretches over 200 miles in the heart of the Great Lakes, the world's largest supply of fresh, clear, clean water. Water to produce with, as well as play in. Water that carries endless flotillas of ships to and from Great Lakes ports and every part of the world, through the St. Lawrence Seaway to the Atlantic Ocean.

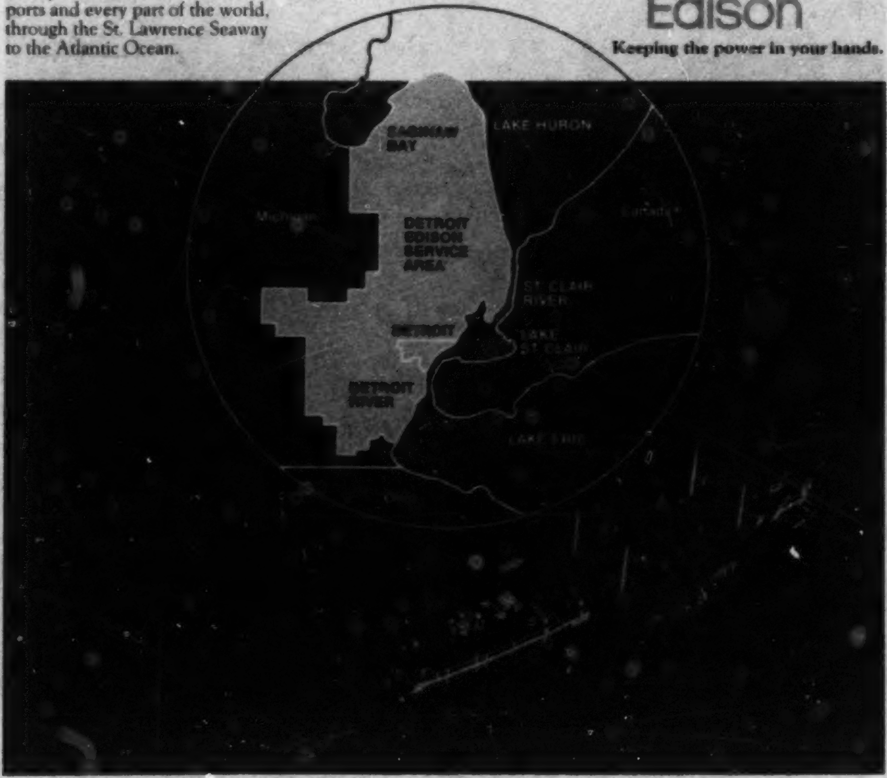
Energy is plentiful, too, in this 7,600-square-mile urban and rural area because Detroit Edison generates more than 90 percent of its electricity from coal, our nation's most abundant and lowest cost fossil fuel.

Because of the vast Great Lakes watershed, Southeastern Michigan will continue to have oceans of fresh water lapping at its shoreline for years to come.

Detroit Edison can provide energy plus information to help you expand your present facilities or locate your new business or industry in Southeastern Michigan. Write: Area Development, Detroit Edison, 308 WCB, 2000 Second Ave., Detroit, MI 48226.

Detroit Edison

Keeping the power in your hands.



Mr. BLANCHARD. Thank you very much, Dr. Eisele.

Now we turn to Representative Tom Anderson, a Michigan State Representative from Southgate, I recall. He is chairman of the Michigan State legislative committee on conservation, environment and recreation.

Representative Anderson.

Mr. ANDERSON. Thank you, Mr. Chairman.

Gentlemen of the committee, ladies and gentlemen, my name is Tom Anderson. As you have said, Mr. Chairman, I have been chairman since 1969 of the committee on conservation, environment and recreation of the Michigan Legislature, the Michigan House of Representatives. I have served on that committee since 1965.

I also served for 8 years as a member of the Natural Resources Committee of the National Conference of State Legislatures since 1976. Until recently, I have served as a member of the Natural Resources Task Force of ISETAP, the Intergovernmental Science, Engineering and Technology Advisory Panel in the Executive Office of the President.

I appreciate the opportunity to discuss with you your bill, Mr. Chairman, H.R. 3600, to amend the National Ocean Pollution Planning Act.

During this time of economic stress, we in Michigan are trying very hard to locate our blessings so as then to count them and preserve them. No point in our State is more than 80 miles from the Great Lakes system. Within the boundaries of Michigan and its control we have more than 38,000 square miles of Great Lakes water area, or 40 percent of the Great Lakes. Without a deep commitment and concerted effort to manage this magnificent expanse of Great Lakes waters and coastal shores, Michigan could not revive the health of its economy nor preserve the beauty of its natural resources.

I don't think it is any surprise, Mr. Chairman, that Michigan is having more difficulty in this time of fiscal crisis than any of the 50 States. Thus we have the most to gain by far-sighted and effective management and the most to lose by significant Federal dollar and program cuts in this vital area.

This is not the first time that Michigan legislators have come before a congressional committee to testify on behalf of the Great Lakes. We are trying to make it clear that the health of the lakes is also the health of Michigan, as well as other bordering States. Federal budget cuts, along with State spending cutbacks mandated by this depressed economy I have mentioned, have been scaring us plenty.

With respect to the Great Lakes water quality programs, the consequences are far more extensive than one might at first consider. There seems to be verbal agreement on the uniqueness of the Great Lakes as a national and international resource, but H.R. 3600 would be, as you have stated, Mr. Chairman, the first time that the Great Lakes' importance, protection and preservation as a national resource has been written into Federal law. I think that such a declaration is long overdue.

H.R. 3600 is "good business" legislation. It is designed to cut duplication, in Great Lakes conservation and research programs, but not to eliminate the efforts, and to coordinate the work now being done by 7 different Government departments, 3 independent agencies, and more than 20 universities. We believe that section 201 of the bill does a fine job of itemizing what needs to be done in this area—to effect a rational coordination and priority system for research, making sure it is comprehensive yet balanced, and then to make sure the results are used and to increase the public awareness and Government cooperation in Great Lake matters.

The bill also commits the Federal government to a continuing policy in cooperation with State and local governments to preserve the Great Lakes so that they may fulfill social, economic and other requirements of present and coming generations.

I think we must have a continuing policy and abandon the start-and-stop approaches that have wasted our money and our professional talent for so long. Cooperation with State and local units of government is another vital ingredient in order that the approach fit the needs of the individual State and locality. And finally, the concern that the resource be preserved for present and future generations shows a healthy respect for the finite nature of our resources and the idea that we are responsible for what we destroy or use up or alter before passing it on to future generations.

Commitment number two of this same section of your bill, Mr. Chairman, speaks to maximizing international cooperation, which some feared, due to administrative budget cuts, would not be honored to its fullest extent with our Canadian neighbor. As a Nation and a State, we have entered into cooperative anti-pollution agreements with Canada and in good faith and for Canada's and the United States' mutual well-being, we must show the sincerity to carry through on those pledges we have made earlier.

In Michigan, as Mr. Leonard Barnes has told us so eloquently in previous testimony, we reap an estimated $9 billion each year from tourism, over a half-billion from sports fishery, and $25 million from commercial fishery. In addition, Michigan's share of the Great Lakes shipping industry was worth $20 billion last year alone. This is the resource that holds a key to a prosperous future for Michigan and the entire Great Lakes region. Michigan's ability to stage an economic comeback from our current financial condition is dependent upon our ability to diversify from our automobile-based economy. The Lakes offer us one avenue of approach.

Though there is mild dispute whether agriculture or tourism qualify for the number two industry slot in Michigan, both have great potential and both are inextricably linked with the continued economic health of the region served by the Great Lakes system.

Likewise, our paper, chemical, petroleum and metal producers need water in great quantities for their processing and cooling steps. Our water supply is abundant, but it is far from inexhaustible. Water usage demands, as most people know, are on a predicted uprise.

While the Great Lakes' benefits at present might seem regional, the possibility of diverting water to deal with predicted water famines in the South and West has become a topic of concern, as the Sun Belt and the Snow Belt States fight for industry and Federal subsidies. There has been discussion of a pipeline from the Great Lakes to supply water to the Western States, and as one might expect, there has been substantial opposition to that suggestion.

This issue of water diversion conjures up serious problems for those dependent upon the Great Lakes. A drawdown of one inch in the Great Lakes could have a substantial negative impact on the shipping industry, forcing lake freighters for which every inch of draft is important to carry less and shoulder economic losses. As Dr. Eisele has said in his testimony, power generators indicate a substantial need for continuing water supply and levels of water supply so as to avoid increases in their costs.

Optimum flow levels are necessary also to preserve the stocks of fish and wildlife, and for the Lakes to be able to cleanse themselves of discharged pollutants.

Mr. Chairman, industrial use of water is rapidly becoming an important factor in Michigan's economic situation. Lower energy and labor costs may have attracted industry to our Nation's Sun Belt, but Michigan's water is an ace-in-the-hole for retaining business in the State.

As President Reagan stated only last month, one of the unique features of America's freedom is "the right of the citizen to vote with his feet" and move from any area not meeting his or her needs. Therefore, if you use that philosophy, called "Reaganomics" by some, the reciprocal, to be fair, is that if industry and people want water, they must come to Michigan and other Great Lakes States.

Michigan's economy, present and future, is in part dependent on whether the States of this region can keep the lakes alive and health, with or without Federal assistance. The first round of administration cuts slashed Great Lakes program funding from $22 million to just over $2 million. We have lost major support in the battle to maintain Great Lakes quality and quantity—the Great Lakes Basin Commission, the sea grant program, the coastal zone management program, and the coastal energy impact program are all gone or sharply curtailed.

We know that congressional maneuvers helped save some of those funds and we are sincerely grateful for this aid. But the final figures are not yet in.

The huge slashes in the multibillion-dollar municipal sewage treatment construction program followed those cuts. Then came the threat of cutting the Environmental Protection Agency's Large Lakes Research Laboratory at Grosse Ile in Detroit's downriver area, and a possibility of our 1972 and 1978 water quality agreements with Canada not being upheld.

I pause at this juncture to compliment this subcommittee for their vision in taking the lead in the fight to maintain the funding for the Grosse Ile station the last 3 or 4 years. It was a very fine effort on your part and the people of Michigan appreciate it.

The lab is essential to protecting public health and making economic decisions and meeting our international obligations, and this subcommittee has demonstrated well that they know that.

We have reversed the downward trend of quality in the lakes and made tremendous strides, but it is significant to remember that scientists not long ago pronounced Lake Erie dead. Notwithstanding that gloomy assessment, Mr. Chairman, Michigan led the charge against such items as DDT, PCB, phosphates, mercury, and even the sea lamprey, all of which threatened the well-being of the

Great Lakes. Federal programs, Federal biologists, and Federal dollars helped tremendously in those fights. And now the Great Lakes have been turned around and are revitalizing at an even faster rate than could have been predicted.

As Mr. Barnes has said, Great Lakes fishing now offers the best lake trout, salmon, and steelhead fishing in the world. Since the almost complete extinction two decades ago of the whitefish and lake trout population due to overfishing and infestation of lamprey eel and the alewife trash fish, which came in to the inner lakes through the canals, Michigan has operated a remarkable restocking program. You have heard some about it, but I just want to tell you that, as an aid to the tourist-luring industries, and to the fisheries industries, the lakes around Michigan are stocked with more than 1.4 million lake trout each year at a cost of more than $24 million, in addition to millions of coho salmon, king salmon, and steelhead, at proportionate costs.

Now is not the time, then, to wean the Great Lakes from all of the nourishing and life-sustaining programs made possible by Federal funds. The Great Lakes system is a functioning ecosystem which must be managed as a whole to protect its ecological integrity and its multiple uses. In order to achieve this, we need funding. We need expertise and we need research, data compilations, application of the findings, goals which are stated in and supported by House Resolution 3600.

Because of their importance, 1980 was Michigan's Year of the Coast, starring the Great Lakes. This was designed to promote awareness and encourage the effective management and protection of Michigan's Great Lakes coastal resources. We made a commitment to their management through a well-developed body of State statutory authority, a tight organizational network of programs, and making the wisest possible use of Federal dollars that come down to us. Unfortunately, our commitment has to be tied to the Federal Government's financial commitment. We simply cannot pick up the tab for all the necessary activities in protecting these lakes.

A lot is at stake. We have a very valuable resource which can enable us to grow and expand in commerce, industry, recreation, and agriculture. And as Governor Milliken stated at the Governors Conference last August: "Proper management and promoting of our water resources will determine, as much as any single factor, the economic conditions of the Midwest by the end of this century."

Mr. Chairman, I commend you for introducing this bill. It is far-reaching and it is a most important bill. I express the sincere hope, and the people of Michigan express it with me, that it can be reported to the Congress as a major step in protection of one of North America's most valuable resources.

Thank you very much.

[The prepared statement of Mr. Anderson follows:]

REMARKS OF STATE REPRESENTATIVE THOMAS J. ANDERSON, CHAIRMAN, COMMITTEE ON CONSERVATION, ENVIRONMENT, AND RECREATION, MICHIGAN STATE LEGISLATURE

Thank you for this opportunity to testify in support of H. R. 3600 to amend the National Ocean Pollution Planning Act of 1978 by including it in the Great Lakes Protection Act of 1981.

I'm here because Michigan is the Great Lakes State and more integrally connected with the future and well-being of the Great Lakes waters than any other State. During this time of economic stress, we in Michigan are trying very hard to locate our blessings—so as then to count them—and preserve them. Never far from any Michigan resident is our State's single greatest asset: the Great Lakes. As a matter of fact, no point in our State is more than 80 miles from the Great Lakes system. Michigan's eastern coastline is embraced by Lake Erie and Lake Huron, while its northernmost shore is flanked by the waters of Lake Superior. Lake Michigan is its westward buffer against the rest of the continent. We have more than 38,575 square miles of Great Lakes water area, or 40 percent of the Great Lakes, in our control. Without a deep commitment and concerted effort to manage this magnificent expanse of Great Lakes coastal shores and waters, Michigan could not revive the health of its economy nor preserve the beauty of its natural resources. Our 3,288 miles of shoreline comprise more than the combined Great Lakes shorelines of Minnesota, Illinois, Indiana, Ohio, and Pennsylvania. Thus, we have the most to gain by far-sighted and effective management and the most to lose by significant Federal dollar and program cuts. The people of Michigan are critically involved in such diverse areas as recreation, agriculture, fish and wildlife habitats, shipping, industry, housing, and water supply.

This is not the first time that Michigan legislators have come before a congressional committee to testify on behalf of the Great Lakes—we are trying to make it clear that the health of the Great Lakes is also the health of Michigan. Federal budget cuts, along the State spending cutbacks, mandated by a depressed economy, have been scaring us plenty. With respect to Great Lakes water quality programs, the consequences are far more expensive than one might at first consider. While there seems to be verbal agreement on the uniqueness of the Great Lakes as a national and international resource, H. R. 3600 would be, as stated by Representative Blanchard, the first time the Great Lakes' importance, protection, and preservation as a national resource was written into Federal law. Such a declaration is long overdue.

H.R. 3600 is "good business" legislation, designed to cut duplication in Great Lakes conservation and research programs, not eliminate the efforts; and to coordinate work now being done by seven different government departments, three independent agencies and more than 20 universities. We believe that Section 201 of the bill does a fine job of itemizing what needs to be done: To effect a rational coordination and priority system for research—making sure it is comprehensive, yet balanced; to then make sure that the results are used; and to increase the public awareness and government cooperation in Great Lakes matters.

The bill also commits the Federal Government to a continuing policy, in cooperation with State and local governments, to preserve the Great Lakes so that they may fulfill social, economic, and other requirements of present and future generations. We must have a continuing policy, and abandon the start-and-stop approaches that have wasted our money and professional talent for so long. Cooperation with State and local units of government is another vital ingredient in order that the approach fit the needs of the individual state and locality. And, finally, the concern that the resource be preserved for present and future generations shows a healthy respect for the finite nature of our resources and the idea that we are responsible for what we destroy, use up, or alter before passing it on to our future generations.

Commitment No. 2 of this same section speaks to maximizing international cooperation—which some feared, due to administrative budget cuts, would not be honored to its fullest extent with our Canadian neighbor. As a nation and a State we've entered into cooperative antipollution agreements with Canada, and in good faith, and for Canada's and the United States' mutual well-being, we must show the sincerity to carry through on those pledges.

Aside from their sheer massive bulk, the Great Lakes are important, also, to Michigan's well-being, present and future. It is the largest body of surface fresh water in the world, containing some 67 trillion gallons of water, and is the drinking water source for 22 million people in the northeastern part of the Nation. Almost 40 million people live in the Great Lakes watershed because of the opportunities present in industry, shipping and recreation. We are in the heart of this section.

In Michigan, we reap an estimated $9 billion each year from tourism, some $500 million from sports fishery, and $25 million from commercial fishery. In addition, Michigan's share of the Great Lakes shipping industry was worth $20 billion last year. (Figures obtained from Monthly Detroit, "Liquid Assets: Will the Great Lakes Survive?" by Nancy Kool, p. 62.) This is the resource that holds a key to a prosperous future for Michigan and the Great Lakes region. Michigan's ability to stage an economic comeback from our current financial nadir is dependent upon our ability to diversify from our automobile-based economy. Though it has not been decided whether agriculture or tourism qualify for the No. 2 industry slot in Michigan, both have great growth potential and both are inextricably linked with the continued health of our Great Lakes system. Likewise, our paper, chemical, petroleum and metal producers need water for their processing and cooling steps. Although our water supply is abundant, it is far from inexhaustible. Water usage demands are on a predicted uprise: In agriculture for increased irrigation needs, by power plant generators and recreational users. This increased demand will also create greater user conflicts and intensify a problem that has recently begun to command the nation's attention.

While the Great Lakes' benefits at present might seem regional, the possibility of diverting water to deal with predicted water famines in the South and West has become a topic of much concern as the Sun-Belt and the Snow-Belt states fight for industry and Federal subsidies. There has been discussion of a pipeline from the Great Lakes to supply water to the Western states—it has met with considerable opposition.

This issue of water diversion conjures up serious problems for those dependent upon the Great Lakes. A drawdown of one inch in the Great Lakes could have a substantial negative impact on the shipping industry, forcing freighters to carry less and shoulder economic losses. Power generators indicate a lowering of water volume would increase their costs, by as much as $1 million per year, to replace the power generated by a lowering of the water level by an amount constituting a flow of just 100 cubic feet per second. Optimum flow levels are also necessary for fish and wildlife survival, and for the Lakes to be able to cleanse themselves of discharged pollutants. (Taken from Water Impacts, report from the Institute of Water Research, Cooperative Extension Service, MSU, April 1981 issue.)

Industrial use of water is rapidly becoming an important factor in Michigan's economic situation. Lower energy and labor costs may have attracted industry to our Nation's sun belt, but Michigan's water is one ace-in-the-hole for retaining business in our State. As President Reagan stated last month, one of the unique features of America's freedom is "the right of the citizen to vote with his feet," and move from any area not meeting his/her needs. Therefore, according to "Reaganomics", the reciprocal, to be fair, is that if industry and people want water, they will have to come to Michigan.

Michigan's economy, present and future, is in part dependent on whether the States of this region can keep the lakes alive and healthy, with or without Federal assistance. The first round of administration cuts slashed Great Lakes program funding from $22 million to just over $2 million. We have lost major support in the battle to maintain Great Lakes quality and quantity: The Great Lakes Basin Commission, the Sea Grant Program, the Coastal Zone Management Program and the Coastal Energy Impact Program. We know that congressional maneuvers helped save some of the funds, and we are sincerely grateful for this aid, but the final figures are not yet in. The huge slashes in the multi-billion dollar municipal sewage treatment construction program followed. Then came the threat of cutting the Environmental Protection Agency's Large Lakes Research Laboratory at Grosse Ile, Mich., and the possibility of our 1972 and 1978 Water Quality Agreements with Canada not being upheld. The lab is essential to protecting public health, making economic decisions and meeting our international obligations. Canada, like Michigan, stands the chance of seeing our gains reversed and the billions of dollars already spent on the Great Lakes cleanup washed away. And the timing could not be worse.

We have reversed the trend and made tremendous strides. It is significant to remember that scientists not long ago pronounced the Lake Erie dead. Yet Michigan led the charge against DDT, PCB, phosphates, sea lampreys, and mercury: all of which threatened the Great Lakes. Federal biologists and dollars helped. And now the Great Lakes are revitalizing at an even faster rate than could have been predicted.

Great Lakes fishing now offers the best lake trout, salmon and steelhead trout fishing in the world. Since the almost complete extinction two decades ago of the whitefish and lake trout population of Lakes Michigan and Huron due to overfishing, infestation of the lamprey eel, and the alewife trash fish, Michigan has operated a remarkable restocking program. Our tourist-luring fisheries are stocked by more than 1.4 million lake trout each year at a cost of more than $24 million, in addition to millions of coho salmon, king salmon, and steelhead.

While the overall 1981 water quality report for Michigan was good, there were spots needing attention: continual control of toxic and hazardous materials dumping, eutrophication of the Great Lakes, acid rain precipitation, erosion, channel improvements, disposition of polluted dredged material, and the continued study of winter navigation upon the environment. Now is not the time to wean the Great Lakes from all the nourishing and life-sustaining programs made possibly by Federal funds. The Great Lakes Basin is a functional ecosystem which must be managed as a whole to protect its ecological integrity and multiple uses. In order to achieve this we need funding, expertise, research, data compilations, and application of findings—goals which are stated in, and supported by, Representative Blanchard's bill.

Because of their importance, 1980 was Michigan's Year of the Coast—starring the Great Lakes. This was designed to promote awareness and encourage the effective management and protection of Michigan's Great Lakes coastal resources. We'd made a commitment to their management through a well-developed body of State statutory authority, a tight organizational network of programs and the wise use of Federal dollars. Unfortunately, our commitment is tied to the Federal Government's financial commitment. We simply cannot pick up the tab for all the necessary Great Lakes activities.

A lot is at stake. We have a very valuable resource which can enable us to grow and expand in commerce, industry, recreation, and agriculture. And, as stated by Governor Milliken at the Governors' conference in August, "Proper managment and promoting of our water resources will determine, as much as any single factor the economic conditions of the Midwest by the end of this century.

I commend Representative Blanchard for this far-reaching and most important bill and would express the sincere hope that it can be reported to the Congress as a major step in protection of one of North America's most valuable resources.

Mr. BLANCHARD. Thank you very much, Tom.

I also note we have been joined by another cosponsor of this legislation, Representative Claudine Schneider of Rhode Island. She has been very helpful on all matters affecting the Great Lakes and environmental quality generally.

I know my colleages have a number of questions. I do want to mention that the thought did occur to me some time ago, earlier this year, that the best defense is a good offense, and having seen two different administrations with different philosophies both wanting to slash Great Lakes water quality programs and both wanting to wind down the effort of monitoring toxics in the lakes—not to mention their effect on human health—it was clear to me that lack of awareness, as I stated earlier, was one of our major problems.

The other was the feeling that the Great Lakes had been cleaned up, and that once they were cleaned up, either because we could show that Lake Erie was in better shape than it had been before, or maybe Lake Michigan, somehow this process was over with and there was no need for research monitoring or enforcement of reasonable methods of preserving the lakes. Of course, as I think all of you know, it is an ongoing process, particularly with the highly complex and active technology industry in Michigan.

So the thought to me was that one way to underscore this is to go on the offense and point out the lakes are not just something that surrounds Michigan or some sort of local parochial body of water, but important to the country and important to many States and important to our relations with Canada, as well as important to our human health, and not something you can hit and run on with regard to understanding the lakes and protecting them. So that had a lot to do with the first provision of the bill declaring it a national resource.

Now, there were some earlier questions that I couldn't answer, but I'm sure you can. One of them was on tourism.

Len, earlier our chairman asked about how many people were coming from States other than Michigan.

Mr. **Barnes**. Michigan itself provides a little bit better than 50 percent of our tourism, and about 50 percent of Michigan's residents do vacation within the State when they do vacation.

I would comment to the chairman that New York's program "I Love New York" has done great things for New York, and even in spite of the fact that Michigan is in a greatly depressed state and our legislature and Governor had to slash every kind of thing there is in terms of money budgets, they have plans for appropriating about $10 million more per year for the next 4 years to launch a large program to make people better aware of Michigan and its great tourism/recreation attractions.

We don't wish to take away from New York, but we are within 1 day's drive there are 35 million people who could come to Michigan, and many don't yet.

Mr. **Blanchard**. I have often wondered why we didn't have such a program, so I think that is going to be a good step.

So somewhat under half the people who travel and use the lakes for tourist purposes are from other States. Are they largely from the Midwest or——

Mr. **Barnes**. Yes.

Mr. **Blanchard**. So it would be Ohio, Indiana, Kentucky, Tennessee——

Mr. **Barnes**. The largest group is from Chicago, and then Cleveland and down into Kentucky, but mainly within a day's drive. Today that is the tourist area for almost every State and every national park, most of them come from that close.

Mr. **Blanchard**. What about the water level question? I recall several years ago very important people living right along the shoreline in Michigan. What's going on here? I think you heard the question from Congressman Lundine, and he wanted me to ask it even though he had to leave.

Mr. **Barnes**. Well, back in the fifties I remember the water level of the Great Lakes went down severely, and the Detroit News and our magazine went around the whole State to see what it had done to tourism. But currently the water level is pretty high and it has remained high since about—it has gotten higher since 1966. When we first built our place on Lake Michigan the water was maybe 100 yards away from our cottage. You never would have dreamed it could ever get there, but it is lapping right down at the bottom of the hill right now. So it has remained high.

It does seem like it has gone down a little this year, but we are not sure of that.

Mr. **Blanchard**. Are there governmental or private actions which affect the level of the lakes?

Mr. **Barnes**. There are many suppositions, none that I know that are factual.

Mr. **Blanchard**. Representative Anderson?

Mr. **Anderson**. Mr. Chairman, the city of Chicago diverts water from Lake Michigan through the Chicago River and the Chicago Drainage Canal, which runs southward, having been changed in direction approximately 100 years ago or a little better to divert water for Chicago's sanitary benefit to the Mississippi River system to the south. This has an effect on the water level of the river, and then by the same token there have been some adjustments made to input rivers, particularly in the Lake Superior area on the Canadian side, for hydroelectric purposes. There have been still some other adjustments where the waters in a couple of cases has been diverted northward. So there are some adjustments made to the level of the Great Lakes.

They have had only limited effect on the total depth of the lakes, total water height, a matter of inches or partial inch for the most part. But the water level is cyclical in nature. The sea grant program, which has been housed in Ann Arbor, the University of Michigan, the Michigan State University Natural Resources Schools have all done studies, and there are charts available which can be made available to this committee showing the cycles, up and down cycles of the Great Lakes for as far back as 100 years or more, showing that—on approximately a 7-year cycle basis the water rises to a height and then falls to a low and then recycles again.

A review of the charts show that is not precisely true, but approximately so. So there are some effects on water levels in the Great Lakes, both manmade and natural.

Mr. BARNES. We're still waiting for that 10-year cycle to come back so we don't have to put new seawalls in every year or so. I guess they are in Lake Huron and down through the Detroit River area, too, Lake Saint Claire.

Mr. BLANCHARD. Well, I know my colleagues have questions, so I think the best thing to do is turn to them and thank you again for being with us.

I now turn to my distinguished colleague from New York, Congressman Carney.

Mr. CARNEY. Thank you very much, Mr. Chairman.

I noted that two of our three witnesses have been associated with the water quality of the Great Lakes since the mid-1960's. I would imagine you have a good corporate memory of the problems of the lakes and as to the relationship of lake improvement or, on the other hand, maybe the degradation on the lake. My question is simply this—and I would like to ask it of both Mr. Anderson and Mr. Barnes:

Since 1965, do you both feel the lake has improved, and if you do, what would you associate that improvement with?

Mr. BARNES. Well, first of all, in 1968 a bond issue was passsed in Michigan for $350 million for clean water and quality recreation, but it mainly was clean water. That, along with Federal funds—which maybe Mr. Anderson is more familiar with than I—have helped to clean up the industrial pollution in Michigan. A great many of the plants, the steel companies and the auto companies have done a great deal in the cleaning up of the water.

It was interesting for me to see in the Chicago Tribune very recently a map of the Great Lakes which had the 15 areas that they thought were the worst pollution or the biggest problems and the only one that had to do with Michigan was the American Sault, and most of that came from industrial pollution on the Canadian side of the Sault. So Michigan has been doing a good job of cleaning up partly as a result of Federal laws, too, I believe.

Mr. CARNEY. Thank you.

Mr. Anderson?

Mr. **Anderson**. Mr. Congressman, I am pleased to say that I have looked at charts, reports, data taken from water quality survey reports over a period of time. I have looked at them repeatedly. The trend is good. The trend is decidedly good. The reports on various kinds of pollution, the biological oxygen demand in some of the lower lakes, the inclusion of certain contaminants, the metallic chemicals, certain compounds which have been harmful are going down. The quantities are decidedly down.

We have other witnesses here who will be able to corroborate that reports from the sea grant program, from the lab on Grosse Ile, others from the Canadian side as well as from the American side, who have done continual monitoring of the waters, find that the quality of water in many parameters is improving, and it is because, as Mr. Barnes has said, of the continual and joint efforts of the States and the Provinces and the Federal Governments to improve that quality and to control certain discharges into the water, to clean out the effects of other discharges that have gotten into the water.

Mr. **Carney**. Would it be fair to say that we probably have data that would catalog the points, the sources of pollution in the Great Lakes?

Mr. **Anderson**. It is correct to say that, sir. We have much data showing where point sources are. We also have data showing nonpoint sources, runoff from wide areas, for example, from the farms of the region from all the States and Provinces which, of course, discharge the residences of certain herbicides and insecticides which have been applied in the fields. Then there are discharges from the cities, from streets, highways, lawns, such things as road salts and fertilizers. Those are all available and both point source and nonpoint source.

Mr. **Carney**. One source would be sewerage. I am not familiar with the area. However, since the passage of Public Law 92-500, have you: one, taken advantage of that law, and two, has that improved the water quality?

I'm making an assumption, though, I must say, that some of your sewerage perhaps was primarily or secondarily treated and then the effluent put into the Great Lakes. I could be wrong on that, but that would be the assumption I'm making. And if so, if that has taken place, has the next scenario which I mentioned taken place as well?

Mr. **Anderson**. Yes; Mr. Congressman. The Federal Government made available to us, as I mentioned in my remarks, a substantial amount of funds for the purpose of addressing the problem of municipal sewage discharge. Although it is regretable that those funds have been squeezed off, the States and local units of government were able to, by means of matching formula, take advantage of these Federal funds and practically all primary sources of discharge, primary treatment sources, have been eliminated. There are still some unfortunate examples extant, but practically all of them have been eliminated and the discharge sources now are, for the most part, secondary treatment discharges, and in some cases are tertiary treatment discharges. We would like to say that all are tertiary treatment discharges, but the vast expense involved in being able to reach that goal prevents it. But there are some definite improvements.

The bond issue that Mr. Barnes alluded to has been most beneficial in Michigan. We have done over 500 individual projects utilizing Federal funds and that bond issue which the people of Michigan passed in 1968.

Mr. CARNEY. I'm sure you will be pleased to know that the construction grants program of EPA, although it is on the shelf, has $2.5 billion committed to that program, and you have taken advantage of it in the past. I would hope that you qualify and do take advantage of it in the future, to help the program along.

I simply must say, Mr. Chairman, that these two gentlemen are dedicated to your Great Lakes with so many years of experience, it is a delight to ask a witness who has such a great background questions.

From that delight I am going to shift to my friend, Dr. Eisele, and ask him a couple of questions, if I might.

I have this "Energy Plus" piece here, and the data up here. Would that indicate to me your service area?

Dr. EISELE. Yes, that's correct. The area outlined in light blue represents our service area.

Mr. CARNEY. How many facilities do you have in that service area, and are all the facilities utilizing the Great Lakes for their water resource?

Dr. EISELE. We have 15 facilities, some very large power plants, some smaller power plants, and all of them use Great Lakes water, either directly or indirectly. Some may use a partial amount of river water, but basically all of them use Great Lakes water.

Mr. CARNEY. I'm curious. In your statement you said that the water, when it is returned, often is in better condition than when it was withdrawn. When it is not often better, what is the circumstance?

Dr. EISELE. Well, I might add a couple of issues there. We discussed the municipal issue and I might mention that from the industrial standpoint, basically all industries are in compliance with Public Law 92-500 that you discussed. In our service area we spent approximately $85 million to make sure we would be in compliance.

The situation with use of water that is used for condenser cooling, is dependant upon the basic water quality in the area. We have powerplants located in Lake Huron and powerplants located in industrial areas in Detroit. Depending on the water quality of the water coming in, there may be some sedimentation. Basically the water is exposed to a slight increase in temperature and it passes through the power plant reasonably quickly—probably in the range of a few seconds. The whole concept is to decrease condenser temperature, so that the steam cycle can be continued.

There is a portion of the Clean Water Act that discusses closed cycle cooling concepts. This is a consumptive use of water. Typically in that type of situation there would be cooling towers. For example, in the pictures of Three Mile Island, the large cooling towers are the things that stand out. What is done there is that a smaller amount of water is taken into the power plant, some water is recycled, but largely the water is evaporated. So all the water is not returned to the water body itself. Only a small amount is returned.

In a once-through plant, large volumes are used. Large volumes are passed through, as I say, in a matter of seconds. The temperature is elevated. In cases where the water quality may have—as Representative Anderson mentioned, an organic load or something of that nature in the water, where there is an oxygen demand, in those cases we use biocides to eliminate fungus and bacteria that are in the water. So, in essence, the water is treated briefly, slightly elevated in temperature, and then returned, all in a matter of a few seconds.

Mr. CARNEY. What is a slightly elevated temperature?

Dr. EISELE. Ten degrees. It would range anywhere from 10° to 15°, 15° representing some of the newer plants.

Mr. CARNEY. Would the 15°, the higher scale, be associated with your nuclear plant?

Dr. EISELE. Typically a fossil fuel powerplant loses part of its heat up the stacks in air emissions, so nuclear plants tend to have more—either a higher degree reject heat in water or else using more cooling water.

Mr. CARNEY. One last question of you, and then I have one question of the other two gentlemen and return back my time.

FISH KILLS

Is the Detroit Edison Co. concerned about fish kills from taking in—I believe you said you use 44 tons of water for every ton of coal you burn?

Dr. EISELE. That's correct.

Mr. CARNEY. That's absolutely incredible. Have you done studies on fish kills?

Dr. EISELE. Yes, we have. That has been recognized as a problem. Obviously, when you're taking in cooling water, you're taking in whatever is in the cooling water. In some cases it may be trash or debris, in which case you're doing a service, and in other cases it may be fish.

We have at our largest powerplant, the Monroe powerplant, a unique fish pump system that works much like a vacuum cleaner. It is based on basic fish behavior, that fish tend to concentrate in one area, and they are drawn up in this pump system and essentially pumped 1 mile underground back to Lake Erie again—at a cost of $3.5 million, I might add.

Mr. CARNEY. That is an old Corps of Engineers technique, if I am not mistaken.

Dr. EISELE. I don't believe it has ever been used on this scale. There is only one other powerplant we know of where it is used. We are talking about a fairly large volume of water there.

Mr. CARNEY. Yes; I know.

My last question of the other two witnesses, and thank you very much, Doctor, is: You indicate there has been an improvement in the quality of the lake's water. You indicate—at least, I believe you did—that we are on the right path. We are taking the right direction, and that H.R. 3600 will enhance the path we are taking by acting as an umbrella for all the things that we have had to do to, one, change the direction in which the lake was going, and, two, to continue to improve and maintain the lake's quality.

I would just like to ask you to comment on, specifically, H.R. 3600, and how you—and I am sure Mr. Anderson, as a State legislator, you can appreciate the problem of the various agencies involved.

How do you see this to be a vehicle that will enhance your ability as a State to deal with the quality of the lake, and how it will enhance the quality of the lake?

Mr. **Anderson**. I am pleased at the question, Mr. Congressman. The reason I like H.R. 3600, basically is that it would eliminate duplication of facilities, duplication of effort, duplication of attempts to improve the quality of the Great Lakes in both—in all of the parameters by which water is judged.

At the present time, as I indicated in my testimony, we have seven agencies who get involved to some substantial degree, in this question of quality in the Great Lakes, and use of the Great Lakes. We have three independent agencies in addition to the government departments, seven government departments, and, as I indicated before, more than 20 universities, all working, sometimes at cross-purposes, but more often in similar veins, duplicating one another's efforts, not relying completely on the activities of the other agencies or the other universities, or the other people working in the field.

I think one of the prime benefits that we could expect from H.R. 3600 is that we could coordinate. The bill provides for the establishment of a coordinating function, the executive director of which would be responsible for seeing that duplication was minimized.

I think we would save money thereby, and be able to channel more funds into the purpose of all the effort than we now do, simply from the very act of eliminating duplication of effort.

And that is one of the very important points, I think, that we can realize physically from the bill. I also applaud, greatly applaud, the statement of policy which was contained in section 201. That is a very, very important statement of policy, one that has never been made before, officially, in Federal law.

Mr. **Carney**. Thank you very much.

Mr. **Barnes**. Well, beside the coordination, which is very important, I think it is important, too, as Congressman Blanchard said, that he wanted to go on the offensive and dramatize to the public the importance of the clean water in the Great Lakes.

Tourism is a thing that people think is really some kind of—it is a kiddy's game, and just a lot of fun. But it isn't. It is very big business. It employs a lot of people who otherwise would not be employed, because they don't have any large skills. It lets them get into the stream.

Some of the things that have happened in Michigan are very dramatic in recent months. Sterling State Park, is near Monroe, it is on the water, below the Detroit River, and until recently, there was no swimming allowed there, because the water was too dirty.

That has been cleaned up now, and also we are catching fish, lots of them, in the Detroit River. And the Detroit River was, until 12, 14, 15 years ago, probably dirtier than the Hudson River, certainly as dirty as New York Harbor.

Today, you can catch fish within the shadows of the skyscrapers in Detroit. The world's largest muskellunge was recently caught there, and they are catching more salmon all the time.

Mr. **Carney**. I can say this: You can also catch fish now on the Hudson River, and we are quite proud of that effort, too. I just thought that you might want to change the way you paraphrased getting people into the stream. It might be more appropriate for you to say we can get them into the lake.

I thank you very, very much for your most enlightening testimony. Mr. Chairman, I yield back my time.

Mr. **Blanchard**. Thank you.

I should mention, too, that at some point, we intend to take the members of the subcommittee out to see the lakes. I find, when I walk around here, very few people that have actually seen them. And we will pick some appropriate spots along the lakes for some hearings, probably Traverse City, maybe Mackinac Island, we will make it in August, perhaps.

Mr. **Anderson**. I am happy to report, Mr. Chairman——

Mr. **Carney**. We are not going to make it in January, I will tell you that.

Mr. **Anderson**. Could I report, Mr. Chairman, that we had some visiting Nebraska Senators at a conference in August in Detroit, who wanted to try our Michigan fishing. We limited out before noon for all of those. I am pleased to report that we sent some good words back to Nebraska.

Mr. **Blanchard**. Good. Representative Schneider, who has been a co-sponsor of this bill since I introduced it.

Mrs. **Schneider**. Mr. Eisele, you had mentioned in your testimony a comment about helping the economic state of the Midwest through this legislation. I apologize for being late at the hearing today, but I have been working this morning and trying to improve the economic environment of the Midwest.

I was at a meeting at the White House with the Northeast-Midwestern Coalition of Republican Congressmen, and the survival and the productivity and the growth or rejuvenation of the Midwest is of great importance to me.

However, I wonder if you could please elaborate. In your statement here, you say that this legislation would facilitate reindustrialization of the Midwest if it is "reasonably interpreted and implemented." What do you mean by that?

Dr. **Eisele**. I think that the important concept of the Great Lakes, from our perspective, is the multiuse concept. And it is not that this strictly be viewed as a limitation on specific activity, that we recognize that industry is important in the Great Lakes; that we attempt to balance the multiple uses that these provide.

The real advantage of the Great Lakes, as we perceive it, is that it is a non-interruptible supply of water, of clean, fresh water, and that because of that advantage, there are many uses that can be made of it, including the recreational aspects, the tourist aspects, the industrial aspects, the transportation aspects.

It provides the wherewithal to get materials in. We bring in a lot of our coal by lake freighter from the Duluth, Minn.-Superior, Wis. area. And we rely on that. We rely on the Great Lakes not only as a raw material, in the production of electricity, but also in the transportation, to get coal and other necessary natural resources that the area may be deficient in, to the area for a sound economic base—industrialized economic base.

Mrs. **Schneider**. Thank you.

One of you had mentioned earlier the value of the Coastal Zone management program. I don't know who had mentioned that. I wonder if you, Representative Anderson, might elaborate on that. I sit on the Merchant Marine and Fisheries Committee, and we have jurisdiction over the Coastal Zone management program. There is a great deal of heated debate right now, and I haven't heard much from the Great Lakes region in this debate.

I wonder if you could broaden my horizon a bit.

Mr. **Anderson**. I would be pleased to, Congresswomen.

The Coastal Zone management program has assisted the State of Michigan. Just to take a few cases. In a series of annual seminars at which we explore and discuss and take action on certain of the problems that exist in and around our coastal areas, it has been a long-standing event, going back about 10 or 12 years.

These seminars have brought a great many people from academia, from industry, from government, to examine the issues for answers to and help for solutions to problems that exist in and around the Coastal Zones.

In addition to that, Coastal Zone management has been helpful to the Department of Natural Resources of our State in studies related to sand dune management. We have some very unique sand dunes in Michigan which were undergoing mining and certain other depravations. The Coastal Zone people have been extremely helpful to the State of Michigan in establishing some of the controls that we have put into effect in the sand dune areas.

We have also relied heavily on the Coastal Zone management people, along with the Corps of Engineers and others, in—as Mr. Barnes has indicated—the cyclical upturns in water levels in those cases where heavy erosion would take place, heavy literal drift would take place.

Those activities of the State of Michigan and its Department of Natural Resources and others, have been in coordination with Federal agencies, including the Coastal Zone management program.

Mrs. **Schneider**. The argument is often put forward, and I think more often than not, it focuses on the enforcement arguments that if the Coastal Zone management program were not in existence, some of those jobs would get done anyway. What you have just highlighted now has been primarily in the area of research and analysis of dunes, et cetera, and also informational exchange.

Do you genuinely see that in order to accomplish that end of having information on coastal drift or protection of wetlands or whatever, it is critically important to have the Federal Government involved in that sort of thing.

Mr. **Anderson**. We believe that jointly we can do the job with much more efficacy than we can do it singly because no one entity has a monopoly on knowledge, no one has a monopoly on ideas. The Federal people, having a broad base, can be extremely helpful, bringing to play some of the information learned, perhaps, in Delaware or in the gulf coast areas.

So, we welcome their support. Now, I am not competent at this juncture, not having come prepared to discuss it, to tell you how many people, Coastal Zone management people, have been put into our problems, but I would assume that it is substantial, because they have been very helpful to us.

I can't offer advice as to whether the number of people there were adequate or inadequate, but they have been helpful.

Mrs. SCHNEIDER. Good. Thank you.

Thank you, Mr. Chairman.

Mr. BLANCHARD. Thank you.

Congressman Weber?

Mr. WEBER. Thank you very much, Mr. Chairman.

I think we are very fortunate to have the testimony of you gentlemen, and the other witnesses that we will be hearing later today. I want to thank you very much for being with us.

I am not a member of this committee, but I have been tremendously interested in what has been taking place here this morning. I come from Toledo. I am one of your nonresident Michigan tourists. I think, during my life, I have spent well over half of my summer vacations up in Michigan at different places, including Frankfort, Mich.

I have climbed your Sleeping Bear Sand Dune a couple of different times. I even managed to catch two coho fish at Frankfort last summer. I can remember the alewife problem along that beach, and I can remember when the beaches of Lake Michigan extended much further out into the lake, and away from the shore, than they do at the present time.

In Toledo, we have one of the most outstanding ports on the Great Lakes. I have been privileged to witness the renewal of Lake Erie that has been spoken about. We are fortunate to have a lake that, I believe, cleanses itself within every, somebody said, 15 years here, but we are concerned about the same problems that are affecting the Great Lakes everywhere.

It seems to me that there is a need to study and to regulate if we are to preserve the tremendous asset that we have. And I would like the panelists to point out to us the differences between the agency that this bill would create and the Great Lakes Basin Commission, which was just recently abolished, so that we can distinguish between the two different concepts that we have here, and I throw that open to you. Because I think it is very important. This is almost a God and motherhood issue, it seems to me, but for the fact that the country does not want to see more wasteful bureaucratic regulation, overlap, duplication.

So, can't you address that question with your comments?

Mr. ANDERSON. Thank you, Congressman. I would be pleased to start the response. One of the significant features of this bill is that it not only brings together into one place the activities of the Federal Government in the Great Lakes area, but it provides a control.

One of the features of the bill is that report analyses must be done on an action in and about the Great Lakes that would have some environmental or some physical effect on the lakes or the water.

Before they undertake the activity, the bill requires that the affected agency report to the executive director of the new agency set up in the bill that they are about to do this. This is a control feature that does not now exist, a feature that will bring to one place all the Federal activities of the seven departments and other agencies that are about to take an action affecting the Great Lakes. This feature brings together pending actions so that someone has awareness of what is being done and eliminates the gray area that has existed in the past.

Mr. **WEBER**. Would the new agency have any permitting authority?

Mr. **ANDERSON**. No; they would not have permitting authority, sir. That is not included in the Act.

Mr. **WEBER**. And what are the differences between this agency and what we just abolished, the Great Lakes Basin Commission?

Mr. **ANDERSON**. This agency would have coordinating control, unlike the Great Lakes Basin Commission, which had been advisory in nature, and had nevertheless done excellent work in studying the effects of various activities, on the Great Lakes and their wellbeing, and on the region itself.

But the executive director of the new agency would have a control, would be able to respond, to go to other agencies, and say, "Look, what you are about to do is now being done by such-and-such an agency. Part of what you propose to do has already been done."

They have a control, a coordinating function which has not heretofore existed. In addition to that, one of the features of the bill is that an inventory would be taken by the executive director, and maintained quarterly. This feature augments the capability of the executive director of the agency to deal with proposals of other agencies to conduct a particular study or particular action in the region.

So, I think it is an improvement, a substantial improvement, over the agencies that have been available to us in the past, although some of the agencies that have been recently phased out, have done yeoman work, and very, very substantial salutory work.

Mr. **WEBER**. Dr. Eisele or Mr. Barnes, do either of you care to comment?

Dr. **EISELE**. I would view this—the function of this group, as being somewhat similar to the Great Lakes Basin Commission. I would agree with Mr. Anderson that the aspect here, though, has been expanded slightly.

The concept, to me, is that it will be under NOAA—which is an advantage. They already have management of the Coastal Zone management program. There is a consistency there that I think we have been lacking. Obviously, as large water users, the electric industry has been involved in the activities of the Coastal Zone Management Act and that allows some consistency.

And it also gives the advantage in this coordination activity, it has an advisory role, but it is a coordinating advisory role, if you will. And it provides a mechanism where all research will be directed into one area, and at least one person will know what is going on in the Great Lakes.

Before, with the Great Lakes Basin Commission, they were involved in specific topics, but I couldn't say that they knew everything that was going on in the Great Lakes. I think that same argument could be made with various different agencies. The EPA is familiar with some activities, but not all the activities in the Great Lakes.

We view that this would have an advantage, because it is in NOAA, it is under the Department of Commerce, it is an established area, and it would have this oversight role and a coordination aspect.

And so, from that standpoint, it would be an advantage. Obviously, we feel that the Great Lakes Basin Commission provided a service, and I think that that service should be picked up. And I think that this would pick up a portion of that service.

Mr. **Barnes**. The Detroit News article, which is attached to my testimony, goes further into detail on this. And my magazine will have a similar editorial, also. It says, in addition to the fact that a lot of different Government agencies are involved, it then gives some examples.

The laboratories, the Environmental Protection Agency, concentrate on acid rain, toxic substances, and water pollution. The Department of Agriculture works on acid rain and fertilizer runoff.

The National Science Foundation studies toxic chemicals in the lakes. The National Oceanic and Atmospheric Administration, Commerce Department, checks water quality, as does the Fish and Wildlife Service at Interior.

The Office of Sea Grants at Commerce doles out research money to universities. So does the National Science Foundation. The Defense Department has the Army Corps of Engineers and the Navy working on research programs.

The Coast Guard, under the Department of Transportation, also conducts research. And the Department of Energy studies the impact of utilities on lake water temperatures, a question that also interests the EPA. Coordination is what this would have a great effect on.

Mr. **Blanchard**. A great answer. We have planned, by the way, to document that more precisely with another set of witnesses after the first of the year, from these various agencies, because they all—we are not sure what their official position is going to be, they have all said this is a good idea, but are not so excited about discussing the lack of coordination.

Mr. **Barnes**. The Representative from Toledo mentions that Lake Erie is being cleaned up, and it takes every 10 or 15 years to do this. Or on Lake Michigan, which I am most interested, it has been said, and I guess documented, that whatever was put in there when Abraham Lincoln was President still hasn't gotten all the way around and out yet.

Mr. **Blanchard**. That's interesting.

Congressman Hertel.

Mr. **Hertel**. Mr. Chairman, I want to thank you for inviting me. I am on the Oceanography Subcommittee of the Merchant Marine Committee, and we also have jurisdiction over this bill, and we are interested in getting it out early next year.

I commend Congressman Blanchard for introducing this bill, and having this idea of finally bringing together Federal jurisdiction in an area that it is much needed.

I want to say, gentlemen, that I agree very much with you, and commend Len Barnes, I can't thank you enough for all the information over the years that I have learned from your magazine and your good work.

Mr. **Barnes**. Thank you.

Mr. **Hertel**. And today was another example of that. My good friend and colleague, Tom Anderson, who has worked tirelessly all these years for a better environment, nationwide, but especially in Michigan, and Doctor, I would like to thank you for being with us today.

I must say that in being a freshman here, the most frustrating thing is every day, there is worse news regarding the economy, certainly for Michigan, but for the Nation, since I have been here.

And particularly when we look at the things that affect the Great Lakes. Yesterday, we passed a Coast Guard authorization bill. It should have been much greater. The Coast Guard is one of the few governmental agencies that brings money back far more than we expend, for its duties, back to our country, and to our government, as far as revenues.

They are the No. 1 fighter against drug traffic, and they don't have the tools to do the job. They are one of the greatest fighters against illegal immigration, and as we can see from the headlines, we are having a great problem.

But specific to Michigan, we have really had a problem before of having the Coast Guard underfunded, now they are going to be more underfunded. And all of the things that we talked about today relate to it.

I chaired a special committee in the Legislature in Michigan on oil spills. Well, the Coast Guard clearly are the people that look for oil spills, and try to prevent oil spills, which are very costly when they occur. And also the problem of gas leakage, and also the problem of polluting our Great Lakes, whether it be from ships or from the land.

And so, it is a great problem in cutting that budget. We talk about pollution across the board, the Coast Guard are needed. But something that you have touched on, tourism. We have, I believe, the most pleasure crafts, boats, small boats, large, in the Great Lakes, especially in Lake Sinclair, than any other place in the entire world.

And so safety is a very important thing, and we are talking about life and death. And again, the Coast Guard is being cut by the administration. This is really harmful.

So, I would like to ask your feelings about the impact of the Coast Guard being cut across the board, how it is going to affect tourism, how it might affect pollution in the future, and how we can get the administration to understand how important this agency can be, not only to the Great Lakes, but to all people that have to rely on and use water.

Mr. **Barnes**. Well, I think there is another example of where maybe this agency can coordinate things. The Coast Guard does have a great deal to with the safety of boaters on the Great Lakes. My summer home is near Traverse City, and not only is the Coast Guard up there, but also the Army has helicopters up there, which they work on, too.

Certainly, the Great Lakes can cause a lot of problems whe they get rough, as we saw in 1967, when 10 or 12 persons died because they didn't know enough not to go out in canoes when the water was really raising the dickens.

Mr. HERTEL. Well, I might ask you, is it true that Lake Superior is the most dangerous water in the world, or some of the most dangerous water in the world?

Mr. BARNES. That has been said, yes. And the ocean skippers say that one of the reasons for the difficulty on the Great Lakes is that, if I understand it correctly, the waves don't come in synchronization, they come in all different directions, in all different waves. And that is why it is more difficult than it is on the ocean.

Mr. HERTEL. There has also been talk by the administration for the first time in history, as far as I know, of having offshore oil drilling in the Great Lakes. Just incredible. I might relate to that one other incredible thing. They talked about putting the MX missile on ships in the Great Lakes. That was discussed by some Congressmen, not the administration.

Mr. ANDERSON. I would like to address that, Mr. Congressmen. First, I want to thank you for your kind words about me, but, Congressman, Mr. Chairman, I have in my committee, at the moment, two bills which have already passed the Michigan State Senate, which deal with prohibition of drilling for hydrocarbons in the Great Lakes, within the waters of the Great Lakes in control of Michigan.

I believe strongly that we must effect some such statute, because we know the extreme effect of a single spill. We have seen many evidences around the world of the degradation that occurs when a single shipwreck occurs or a single offshore well breaks loose, leaking from the subsurface.

And, so, I believe it is important, if we are going to maintain the gains that we have made, that we exercise every possible control. I think there are ways that we can obtain a good share of the hydrocarbons that lie under the Great Lakes, if they be there, by means of directional and controlled drilling, capabilities and technologies that are well within the ability of industry to handle.

I have looked at some of the activites of the oil people on offshore platforms in the gulf on several occasions. They have superb technology, superb capability, so I am going to do what I can to insure passage of those prohibition bills.

On the subject of the Coast Guard, your prior question——

Mr. HERTEL. I would like to work with you on that. I am aware of Senator Faust's bills, and we are working on a bill here in the Congress that I have sponsored regarding Federal jurisdiction when we get outside the States' three-mile jurisdiction in some of the Lakes.

Mr. ANDERSON. I will be very pleased to contact your office and coordinate our activities.

On the subject of the Coast Guard, Congressman, a few years ago, we passed in Michigan, as one of the first States to address the question meaningfully, a bill to require all on-board toilets for water craft to be self-containing, not to any longer discharge into the waters of the Lakes, or of any connecting waters.

There was difficulty, as you might expect, in making a significant change of that nature, but we worked very closely with the Coast Guard on enforcement, once we had the bill in place, and they have been most helpful.

So I would therefore like to suggest to you that the Coast Guard can be very helpful in maintenance of pollution control activities and discharges. Not only in taking direct action, but in bringing them to the attention of the local authorities.

Mr. HERTEL. I would like to mention I would like to work with Mr. Barnes, continue to work with him, on the question of winter navigation, which is, again, going to be before the Merchant Marine Committee later this year.

Time related to that, and, really, all three of you, the administration has really shown some great reluctance to continue funding of the commitments for waste water treatment. I know, Tom, you have worked on that for years, and you were on one committee, special committee, regarding that problem.

Could you talk briefly about what kind of impact that would have on the Great Lakes if we lose that kind of funding, especially with Michigan's budget being cut, what, over 20 percent just this year, because of the economic condition?

Mr. ANDERSON. That is correct. Michigan's budget has been cut. We anticipate even further cuts, Congressman. The fiscal situation in Michigan is still on the downhill slide, and has not yet bottomed out. So, we are very apprehensive.

The monies that came from the Federal establishment for pollution control activities, particularly in sewage control areas—Mr. Brian O'Malley, who sits with you, was very helpful when he worked for our committee in working with the Federal Government in pinpointing areas where major attention was needed. The Federal money, hundreds of millions of dollars became available to us, made it possible for somewhere around 500 individual projects to be planned and completed, in the area of municipal sewage control, bringing, sometimes, no treatment at all into secondary stage, bringing primary treatment, in many cases, into secondary stage, in a few instances, bringing secondary treatment to the tertiary stages, sometimes for experiment or demonstration, sometimes for effect. Thus, the Federal monies that were available to us were put to good use. We established a priority system based on need, on a number of factors, which I won't take the time to go into here. I will be pleased to respond in detail at some future date on the large number of projects that were done with the Federal money made available for Lakes' cleanup and for water quality improvement generally that have a beneficial effect on the Lakes.

Mr. HERTEL. Thank you, we could use that additional information.

Let me just ask one more question, quickly. We had a special port committee, when we created the new Port Authority in Detroit.

Now, let me say something good about the administration. They are helping us in the fight to deregulate tariffs and other matters that would give us an advantage, really, at our juncture in Detroit, with the Canadian land bridge.

Let me ask, Len, you have written many times about the Port of Detroit.

What do you think we can do to improve that port, and Doctor, let me ask you, since you talked about coal, which is one of the major things we bring into the port there, for the Monroe plant and so forth, are there any things that we can do additionally besides enlarging the St. Lawrence that would assist Edison and other people that are transporting coal?

Len, could I ask you first?

Mr. **Barnes**. Well, I don't know what can be done there. I have noticed that it is because of the St. Lawrence Seaway. My understanding is that the ships are getting larger and they can't be handled through there, or they can't be handled even in the locks.

One of the things that disturbs me, and I think this is a good reason for having this bill, as Congressman Blanchard put forth, is the coordination of such things. I have a concern, if indeed there is going to be shipping all year, and if the ships are going to get larger, and if that means there has to be more water for them, what is that going to do to tourism? That must also be examined and also what is it going to do to the fishing? I don't know that it will hurt the fishing, but I sure don't know whether it will or not.

And that is the thing that this coordinating agency will examine before anything is done.

Dr. **Eisele**. The issue of coal, obviously, is something that is an issue of controversy. I mean it is associated with some of the discussions today, associated with acid rain, and other types of difficulties with coal. I would say from the standpoint of burning coal, our company has made a commitment to burn coal in an environmentally acceptable manner.

We have the wherewithal to transport. We have a 1,000-foot freighter, and 770-foot lake freighter that we transport coal that is mined out in Montana, comes by rail to the Duluth, Minn.-Superior, Wis. area; then it is shipped via Great Lakes freighters to our facilities.

I think the difficulties in Great Lakes shipping can be easily handled. Obviously, the United States has to make a commitment to coal. I think that the rail situations have to be improved and I think that the wherewithal now for Great Lakes shipping of coal and possibly even export of coal is a very real possibility, and I think it is something that should be looked into.

Obviously, we have this mechanism of transport that could go all the way from Duluth, Minn. to Europe. I mean, basically, through the Great Lakes system and through the St. Lawrence Seaway.

We look on it as an issue of getting in coal and in sizeable quantities. We use millions of tons of coal, so it is that type of shipment we would be talking about, and obviously, that is part of the industrial base of southeastern Michigan.

So I would say that it is a basic commitment of the Nation to coal, to using coal in an environmentally acceptable manner, and I think that the issues of Great Lakes shipping can be worked out well with that basis.

Mr. **Hertel**. Thank you.

Mr. **Blanchard**. Well, thank you very much. We have additional witnesses, but the three of you are most enlightening, and again, on behalf of the subcommittee and myself especially, thank you for taking time from your busy schedule to come here to Washington to help us out.

Thank you. I should mention, too, for the record, that this particular subcommittee, without them, we would not have been able to keep that Grosse Ile Laboratory open. All of them played a key role, so I think your testimony underscores the importance of what they helped us do. I appreciate that.

Mr. **Blanchard**. Our next witness is Malcolm P. Sillars, who, among other things is a meteorologist, has taught college physics, has authored numerous publications, now lives in Grosse Points Farm, Michigan.

But, most importantly, I guess, he is best known as Mal Sillars, who is the WDIV-TV-4 weatherman; but also chief meteorologist, and we are very pleased to have you here, Mal, and appreciate your flying in this morning, and I understand you are going to have to fly out shortly as well, but we appreciate your being on hand to help us out.

And without any further ado, let me simply turn the program over to you and thank you for being with us.

STATEMENT OF MAL SILLARS, WDIV-TV, DETROIT, MICH.

Mr. **Sillars**. Thank you very much, Mr. Acting Chairman, and members of the subcommittee. I am Malcolm Sillars, and as you mentioned, I am a professional meteorologist, and now chief meteorologist at channel 4 in Detroit.

I am also a Great Lakes sailor, and my support for H.R. 3600 makes me very pleased to be here this morning.

My interest in the Great Lakes has many facets. As a U.S. citizen, I view the Great Lakes as one of our Nation's greatest resources, and one that must be safeguarded for our well-being. As a resident of the region, I enjoy the beauty from the land, and I reap the benefits, of course, from the industry that the Lakes do provide, and I certainly appreciate the relaxation and certain challenges involved in sailing the water during certain times of the year.

As a scientist, my concern is not only for the abuses that we overlook, but also for the processes that we often fail to understand when we are dealing with these resources.

Having been active in the environmental community for the last 15 years, first as a professor, and then as a consultant, I have seen interest grow and national interest change where our national resources are concerned.

Now, as has been stated many times, the Great Lakes system constitutes most of the fresh water in North America, some 20 percent of the world's fresh water. This system is a large one, and necessarily involved with many smaller systems.

During the course of the hearings, these various systems will be discussed, showing both the enormity and the delicacy of the Great Lakes.

During the past decade, my efforts have been pretty much in the area of air pollution technology, and air pollution meteorology.

Through the sixties and the seventies our catch phrase was "dilution is the solution to pollution."

Without fully understanding all the intricacies of our natural systems, we arbitrarily made rules as to what was safe to breathe. We then went around building tall stacks, put the gaseous debris way up in the air, then said that the air down here was certainly clean enough to breathe.

Now, any good engineer knows that no one system in a factory operates totally independent of others, and so it is with nature. Natural systems are very much interrelated, whether we consider them to be so or not. Thus, it is that the air-water systems have a very strong link. What we have done to clean our air, in some cases, may have dirtied our waters at the same time.

Now, geographically, the Great Lakes are about halfway between the Equator and the North Pole. That puts them underneath the wind band we call the westerlies. They are also traversed by the jet stream.

Like the Great Lakes, the atmosphere is considered a large ocean of air, and it is involved in systems both large and small; the jet stream certainly being a large one. It is a high-speed core of wind, some 4 or 5 miles aloft, and it gives significant energy to storms that move across the central part of the Nation.

Surrounding this jet is a broad band of lower speed winds called the westerlies, and they have extensive carrying capacities. One example, of course, is well-known. Back in the 1880's, following the eruption of Krakatoa in Sumatra, volcanic ash was blown skyward, became entrained in these westerly winds, and circled the Earth for some 5 years, giving hazy skies, and some colorful sunsets from Paris to New York, and on around the globe.

Now, this effect gradually diminished, and the reason it did is because thousands of tons of debris just gradually settled out as this dirt circled and circled.

On occasion, in the upper Midwest, we get some dust on the laundry hanging out on the line, on our cars, on ourselves, from wind erosion, due to strong southwest winds from Oklahoma and Kansas to Michigan.

And recently, we watched hazy skies as the smoke from Mount St. Helens went right across overhead.

Studies of the last decade have shown both particulate and gaseous debris from industry in mid-America to be borne westward to the East Coast cities, and right now, for us, of international significance, is the effluent from some of our Detroit industry managing to end up on our Canadian neighbors.

The transport of material by the wind is just not lateral or across the face of the Earth, but it also has vertical, or up and down components. Some research I did that was presented in a paper to the International Conference on Photochemical Oxidant Pollution and Its Controls, some years ago in Raleigh, N.C., showed that we could attribute some of the large ozone readings along the surface of the Earth in the Midwest to be due to downwelling from the atmosphere, brought down by low-level jets.

It is these low-level jets that can distribute gas, pollutants or whatever.

Something some of you may be familiar with, the cooling lake breeze that we enjoy on a hot, sunny day along the shoreline of the Great Lakes. This is an example of a small-scale system.

In the morning, the land starts to heat much faster than the water. The air rises, heads out over the water, and cooler air comes right back in to the shoreline to replace that upward moving air. In a very short period of time, a circulation pattern will develop that will last all day, and we call this a sea breeze, or lake breeze, in the case of the Great Lakes.

At nighttime, the pattern reverses, and that is our land breeze. But here again, a small circulation pattern set up just because of the difference in temperature between the water and the land.

Debris, natural and industrial, can reach the Earth's surface in any number of ways. Generally, particles that are thrown up, or thrust up, into the atmosphere from stacks tend to settle toward the Earth as soon as they are ejected.

In the case of small stacks, this doesn't take as long. And so, now with the tall stacks, dirt from Gary, Ind. can be found falling into Lakes Erie and Ontario.

In the case of shoreline industry, we have that lake breeze-land breeze situation that can just take the dirt out and settle it on the waters. Lighter particles and gases tend to remain aloft a good bit longer, but they also are brought to the surface by gradual vertical motion or perhaps the entrainment in the low-level jets.

A very important process, and one gaining interest now across the Nation, is that of acid rain, and many of the small dirt particles that do get thrown up into the air become nuclei for raindrop development.

And in many cases, raindrops that are formed are found to be slightly acidic. Gases in the air can undergo photochemical changes in the presence of sunlight, forming products that may be absorbed by water droplets, or even forced to the water surface by the air currents.

Meteorology plays another significant role. Cold air crossing the Great Lakes picks up moisture, as the winds move from west to east. This process is most pronounced during the cold months, and over the east-west lakes, namely Superior, Erie, and Ontario. That is the notorious lake effect, which dumps snow along our shoreline of Lake Michigan. But more importantly, in many areas, that is also a means of getting water on shore for agricultural purposes, such as the grape-growing industry in western New York, and also western Michigan. That effect can also bring the pollution from the waters onto the land.

So, the chain is really unending. I think that is what we are trying to show.

Now, because the surface area of the Great Lakes is so extensive, it has a remarkable ability to collect a lot of our industrial garbage through atmospheric means. Because of the volume of the water, it also has a natural cleaning system. The deterioration of the water originally was fairly slow, and then it started increasing in speed.

We have turned it around. And the water quality is improving, and I think that is a good point at which progress should not be stopped.

The economic times require many adjustments, both nationally and individually, and we will survive them, certainly. However, we do need to take care of our natural systems, which I think are going to become more important to our national survival as time goes on.

One, of course, which was mentioned earlier, is the overtaxation of the Sun Belt water supplies. Much of our population may soon be depending upon the Great Lakes for survival. Because of the scientific, industrial, personal, and political natures of the Great Lakes, sound economic practice, and responsible stewardship for the waters require a single overseer; most logically, at the Federal level, because of its broad base.

Therefore, H.R. 3600, introduced by Mr. Blanchard, suitably sets up a mechanism for such coordination. And I heartily support H.R. 3600, and commend you for its introduction.

Thank you. Any questions?

[The prepared statement of Mr. Sillars follows:]

TESTIMONY
of
Malcolm P. Sillars
Chief Meteorologist, WDIV-TV, Detroit, Michigan

to
The Subcommittee on Natural Resources,
Agriculture Research and Environment
U.S. House of Representatives
December 15, 1981
Washington, D. C.

Mr. Chairman, members of the Subcommittee, good morning. I am Malcolm Sillars, a professional meteorologist currently chief meteorologist at WDIV-TV in Detroit, Michigan. I am also a Great Lakes sailor. I am pleased to speak to you this morning on a subject which has great importance to me, to the Midwest and to our country. It is the realization of this importance that has prompted this hearing.

Introduction

My interest in the Great Lakes has many facets. As a U.S. citizen, I view the Great Lakes as one of the nation's greatest resources and one that must be safeguarded for our well-being.

As a resident of the region, I enjoy the beauty from land, reap the benefits from the industry the Lakes provide, and appreciate the relaxation and challenges involved in sailing the waters.

As a scientist, my concern is not only for the abuses that we overlook but also for the processes we often fail to understand when dealing with these resources.

Having been active in the environmental community for the last 15 years, first as a professor and then as a consultant, I have seen interest grow and national attention change where our national resources are concerned. (I think Americans have always been ready to support an issue when it has been shown to be of significant interest, and with the significant gains made in the past few years, this is not the time to backstep.)

As has been stated many times, the Great Lakes system constitutes most of the fresh water in North America and 20 percent of the world's fresh water. A system this large is necessarily involved with many smaller systems. During the course of these hearings, these various systems will be discussed, showing both the enormity

During the past decade, my efforts have been in air pollution technology and air pollution meteorology. Through the 1960s and 1970s, the catch phrase as "dilution is the solution to pollution." Without fully understanding the intricacies of our natural systems, we made arbitrary rules as to what was safe to breathe, and then went about the business of building very tall chimneys -- putting the smoke and gaseous debris well up into the atmosphere, so that our meters on the ground would tell us that we had clean air.

Now, any good engineer knows that no one system of a factory operates independently; so it is with nature. Natural systems are very much interrelated, whether or not we consider them to be so. Thus it is that the air and water systems have very strong links. What we have done to clean our air may very well be dirtying our water.

Meteorology

Geographically, the Great Lakes are about halfway between the Equator and the North Pole. They lie under the band of winds known as the Westerlies, and in the area traversed by the Polar

Jet Stream.

Like the Great Lakes, the atmosphere -- which can be considered an ocean of air -- is part of many other systems, both large and small.

Large-scale

The jet stream is a high-speed core of wind some four to five miles aloft. It controls to some extent movement of weather systems and can give large storms significant energy. Surrounding the jet is the broad band of lower-speed winds called the Westerlies. The extensive carrying capacity of these winds has long been known. One vivid example was during the mid-1880s following the eruption of Krakatao in Sumatra. Volcanic ash blown skyward became entrained in the winds aloft and circled the earth visibly for some five years, yielding milky skies and colorful sensets across the Northern Hemisphere. This effect gradually diminished as thousands of tons of debris settled across the face of the earth.

On occasion, the upper Midwest is blanketed by dust when strong southwest winds erode the soils of Oklahoma and Kansas. And recently, we watched our skies turn opaque as dust from Mount St. Helen passed by some 25,000 feet overhead.

Studies of the last decade have shown both particulate and gaseous debris from industry of mid-America is borne by the Westerlies to the East Coast cities. Of international significance is the effluent of our Detroit industry carried eastward and deposited on our Canadian neighbors.

The transport of material by the wind is not just lateral across the face of the earth, but can also have a vertical component. In a paper presented to the International Conference on Photochemical Oxidant Pollution and Its Control in Raleigh, North Carolina, research that I had done showed that there are many incidences of strong ozone occurrences at the earth's surface, due to downwelling of ozone from four and five miles up in the atmosphere. Low-level jets, of some 50 miles per hour or so, were responsible for transporting this ozone great distances, both vertically and laterally, with outbreaks across the Midwest spread out by 50 or 100 miles.

Small-scale

The cooling lake breeze enjoyed on a hot sunny day along the

Great Lakes shorelines is an example of a local or small-scale system.

Heated air over land along the shoreline rises and gradually moves out over the lake, while cooler air directly over the water surface moves onshore. In a short period of time, a circulation pattern develops that will last all day. This is the lake-breeze effect. With nighttime cooling the pattern reverses. This process is known as the land breeze. Although this process is enhanced by summer heating, it requires only a temperature difference between the land and water surface temperatures. It can, therefore, occur during all seasons.

Polluting the waters

Debris, natural and industrial, can reach the earth surface in a number of ways. Generally, particles start to settle toward the earth as soon as ejected from stacks tall or short. In the case of the tall stacks, dirt from Gary, Indiana, can now be collected by Lakes Ontario and Erie. With short stacks, the distance traveled is much shorter. In the case of shoreline industry, the effluent may be entrained in the lake breeze and deposited on the shoreline waters.

Lighter particles and gases remain aloft longer, but can be brought to the surface by gradual vertical motion or by entrainment in low-level jets.

Another very important process, one gaining great interest now, is that of acid rain. Many of the small dirt particules that remain in the upper air stream become nuclei for raindrop formation. In many cases, the rain drops formed are slightly acidic.

Gases in the air often undergo photochemical changes in the presence of sunlight forming products that may be adsorbed by water droplets or even forced to the water surface by air currents.

Meteorology also plays another role of great importance. Cold air crossing the Lakes picks up moisture as it moves from west to east. This process is most pronounced during the cold months and over the east-west Lakes, namely, Superior, Erie and Ontario. The process which provides the notorious lake-effect snow provides many of our agricultural areas with depended-on moisture -- but also can bring pollutants from the waters. This chain is unending.

Because the surface of the Great Lakes water system is so extensive, it has the ability to collect much of our "industrial garbage" through atmospheric means. Because of the volume of water and a natural cleaning system, the deterioration of water quality started slowly and gradually increased. But we have turned the direction around and water quality is slowly improving. But the progress should not be stopped.

These economic times require many adjustments nationally and individually, but we will survive them. However, we also need to take care of the natural systems which are going to become even more important to national survival, one of which is the Great Lakes. For example, with overtaxation of Sun Belt water supplies, much of our population may soon be depending upon the Great Lakes for survival.

Because of the scientific, industrial, personal and political nature of the Great Lakes, sound economic practice and responsible stewardship for the waters require a single overseer, most logically at the federal level.

Section 201 of HR 3600 introduced by Mr. Blanchard suitably sets up the mechanism for such coordination. I support that proposed legislation.

Thank you.

Mr. **Blanchard**. Thank you very much.

Congressman Hertel?

Mr. **Hertel**. Thank you, Mr. Chairman. I want to compliment you. I have listened to you for years, and I have watched you on TV for years. In fact, just personally, when I am planning a trip or driving some place, I try to catch the news especially to find out, especially now, flying, what the weather might be.

I only wish the public knew your other areas of expertise as well as meteorology.

Mr. **Sillars**. Thank you.

Mr. **Hertel**. Today, I had four questions for you on acid rain. You have already answered all four in your testimony, and I appreciate that knowledge, and I would like to call on you as a resource person in the future——

Mr. **Sillars**. I would be pleased.

Mr. **Hertel**. I would like to make a suggestion. Maybe Channel 4 would consider doing some specials, or at least special segments, about the problem of acid rain. It is such an important issue. and really, the public is just beginning to realize it, and it is a complicated issue, and I think it would be a great public service.

Mr. **Sillars**. Thank you.

Mr. **Blanchard**. Congressman Weber.

Mr. **Weber**. I, certainly, have enjoyed your testimony, Mr. Sillars. You beam into the Toledo market area, I have enjoyed watching your presentations on channel 4, also. But I don't have any questions.

Mr. **Sillars**. Thank you.

Mr. **Blanchard**. I am curious as to whether, from your experience, what the greatest threat to the Great Lakes might be. We heard from a number of others, and we will hear from still others, about how important they are to our State.

But from your background and training and education and experience, What do you think is the greatest threat to the lakes?

Mr. **Sillars**. Well, I think in the past, it has been just straight pollution going in. But I think we have pretty well taken care of that. The air pollution problem, certainly, is getting better. So, that is taken care of.

Very possibly, just exploitation of the water rights will be the one biggest problem. I think the lakes need to be considered to be a very delicate system. This includes the land adjacent to them, as well as the waters.

I think in terms of the physical air and the water interchange, that has been probably pretty well covered. That is why I think this bill is so particularly important, because anybody dealing in any way with the Great Lakes will have to go through channels, so to speak, not to pun on the term.

But I think that is the important thing.

Mr. **Blanchard**. Thank you. Dennis?

Mr. **Hertel**. There is one—I don't know. We haven't seen the figures. What is the acid level regarding the Great Lakes now? And how does it compare to, oh, say, New York and some of the States that are even hit more severely?

Mr. **Sillars**. I couldn't give you a number right off the bat. I don't think that acid rain is a huge problem, but it is one of many, and as I mentioned earlier, there is a lot of things we don't understand, and we do the best we can, certainly, with what we know.

As we go on with research, we tend to find new things out, and that is why we need to tread carefully. It certainly will have to be a problem, because that acid rain is a problem wherever there is industrialization. Certainly the runoff into the lakes, as well as the catching ability of the lakes' surface will cause acid rain to fall in the lakes, and necessarily change them. But the lakes are big enough that they can handle some. It is always a tradeoff between the industrialization and keeping of good limits. But I don't have a number that I could really give you.

Mr. **Hertel**. Thank you.

Mr. **Blanchard**. So, it goes without saying that you underscore the need for knowing more, and that you would support, obviously, continued research. You would agree that the idea that we know all we need to know, and things have been cleaned up, is not a correct idea, that this is an ongoing process, and we need to get all the bang we can for our buck when we are talking about research with the Great Lakes.

Mr. **Sillars**. That is right.

Mr. **Blanchard**. Well, thank you very much for being with us.

Mr. **Sillars**. Thank you very much. I appreciate it.

Mr. **Blanchard**. We hope to be able to call on all of our witnesses, including you, Mal, from time to time, for information regarding the Great Lakes and any related matters. So, we appreciate your interest.

Our next panel consists of three gentlemen who have a distinguished record in their concern for fighting, protecting, and preserving Great Lakes water quality. All of them are from Michigan. I will ask now Mr. Thomas L. Washington, who is the head of the Michigan United Conservation Clubs, in Lansing, Mich.; Mr. Norman Rollar, with the Sierra Club, from Ann Arbor, Mich.; and Mr. David Jasperse, who is with Project Lakewell, from Holland, Mich., to please step forward in order to testify, then have questions as a panel.

We are about to be called over to the floor of the House for either an attendance check, a quorum call, or a vote. If that happens, we will temporarily recess and come back.

In anticipation of that, some of our colleagues have disappeared. But let me just simply turn it over to Tom Washington. Thank you for being here, Tom. We would appreciate any thoughts you have. We can enter your entire statement in the record, if you like, and you can summarize your position.

STATEMENTS OF THOMAS L. WASHINGTON, MICHIGAN UNITED CONSERVATION CLUBS, LANSING, MICH.; NORMAN ROLLAR, SIERRA CLUB, ANN ARBOR, MICH.; AND DAVID JASPERSE, PROJECT LAKEWELL, HOLLAND, MICH.

Mr. **Washington**. Thank you very much, Mr. Chairman, members of the committee.

I think that enough has been said in terms of superlatives to describe the lakes. I probably could add a few things to it. I think it is significant to note that the State that I am from owns title to about

40 percent of these Great Lakes. So we do have a very valid interest in this legislation and any legislation which does affect the Great Lakes Basin.

I might also point out that where the Great Lakes come to an end in the St. Lawrence River, there is more water discharged than any other river on the face of the Earth. That is probably a little-known fact.

Michigan, too, has something like 2 square miles of water for every 3 square miles of land. So we have got more water than any other State in the Nation.

Historically and geographically, the Great Lakes have shaped both of our peninsulas. And they continue to shape much of our State's economic development, its outdoor recreation, its energy development, its tourism, and its commerce, as you have already heard.

Federal programs that affect the lakes have potential to enhance or to cripple our State's future prosperity. H.R. 3600, we believe, is a modest step in a continuing effort to protect the Great Lakes. Since passage of the Boundary Waters Treaty with Canada in 1909, we have recognized the difficulties in properly managing and protecting this interstate and international resource, and the need for coordination of our effort.

H.R. 3600 is a logical extension of an evolving international policy toward the lakes. Let me enumerate a few recent initiatives.

They would include, first of all, passage of the Coastal Zone Management Act in 1972, which requires Federal programs affecting the Great Lakes to be consistent with federally-approved State plans.

Second, the adoption of the United States-Canadian Great Lakes Water Quality Agreement of 1978.

Third, adoption by all United States and Canadian agencies dealing with Great Lakes fisheries in a document called a Joint Strategic Plan for Management of the Great Lakes Fisheries in 1980.

Fourth, a proposal by our Governor, William Milliken, just this year, at the Midwest Governors Conference in Milwaukee, for a similar compact to the Strategic Plan for the Management of the Great Lakes Fisheries, a compact relating to possible water diversions from the Great Lakes Basin.

I would like to elaborate on that just for a moment. Representative Anderson mentioned something about water diversion in his comments. I think that the potential for future diversion to the South and to the Southwest, in particular, is one of major significance, and I don't think it is something that should be brushed blithely under the rug.

There have been rumors of proposals for major water diversions in just the last few months. There are some water diversions already in existence, and unfortunately, there is case law which has permitted water diversions in the past.

So, an ability on the part of the Great Lakes States to forestall future water diversions may be difficult at best. I think we need to be cognizant of that and to watch it very carefully. I know that it is of great concern to our Canadian friends to the north of us.

And lastly, a proposal to establish an international network of private conservation interests in the Great Lakes Basin which will be the focus of a Great Lakes Federation Conference that we will conduct next spring.

We have been recipients of a rather substantial grant from the Joyce Foundation, a private foundation in Chicago, for the sole purpose of attempting to establish a Great Lakes Federation, a multinational federation of concerned citizen groups, persons, and organizations that are concerned with the welfare and the environmental quality of the Great Lakes Basin.

We hope to get that under way, in fact, we will get it under way with the preliminary conference in May to be held on Mackinac Island. Representatives of the eight bordering States on the Great Lakes and the two Canadian Provinces on the system will be invited.

In the past, Federal and State programs and research have been fragmented and poorly coordinated relating to fisheries management, water diversions, navigation, energy and pollution control.

The key emerging issues which will threaten the lakes, such as airborne pollution, persistent toxic chemicals, water diversion, mandate better cooperation between the States, between the Federal agencies, and, of course, between the United States and Canada.

H.R. 3600 will help insure progress continues. In the face of our progress in establishing better coordination of efforts to protect the lakes, we have been rudely reminded of how fragile are our gains.

A change in administration, which occurs, of course, every 4 years, can destroy overnight research programs and scientific staffs that have been built over great many periods of years.

Coastal Zone Management Act requirements for meaningful coordination of Federal programs with States would have been entirely gutted by this present administration, except for rapid opposition by the public and by this Congress.

The Great Lakes Basin Commission, which had become an effective voice of interstate communication and a growing force in coordinating Great Lakes research, was of course abolished this year.

We believe that H.R. 3600 will clearly and unequivocally place into law the policy of the United States toward management of the Great Lakes, and we are very pleased, Mr. Congressman, to see you make that policy statement in this legislation.

It is one which is long overdue and one, if all else fails, should definitely be made by the Congress of the United States. It is a logical step in our growing appreciation of the fragile grandeur and the economic importance of this national treasure, and will set into law policies already being pursued to a growing extent by State and Federal agencies and commissions toward the Great Lakes, and I will rest at this point, and turn the chair back to you.

[The prepared statement of Mr. Washington follows:]

STATEMENT BY THOMAS L. WASHINGTON, EXECUTIVE DIRECTOR,
MICHIGAN UNITED CONSERVATION CLUBS
TO THE
NATURAL RESOURCE AND ENVIRONMENT SUBCOMMITTEE,
HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY
CHAIRMAN, JAMES H. SCHEUER

RE: H.R. 3600, THE GREAT LAKES PROTECTION ACT

DECEMBER 15, 1981

Superlatives to describe the Great Lakes are unlimited. They are a unique national treasure. The Great Lakes form the largest body of fresh water on earth and have the world's first, fifth, sixth, twelfth, and fourteenth largest fresh water lakes. The St. Lawrence River discharges the greatest volume of water of any river in North America. Nearly 24 million Americans depend on the Great Lakes today for drinking water.

My state of Michigan is particularly tied to the Great Lakes. We own title to 40 percent of their area and have 3,200 miles of shoreline on four of the five lakes. Michigan has a higher ratio of our area covered by fresh water compared to land than any other state or country--two square miles of Great Lakes surface water for every three of land.

Tourism and travel, much of it related directly to the Great Lakes, is a $9 billion annual industry in Michigan. The Great Lakes sports fishery is a $350 million annual business in our state alone.

Historically and geographically the Great Lakes have shaped our two peninsulas. They continue to shape much of our state's economic development, outdoor recreation, energy development, tourism, and commerce. Federal programs affecting the Great Lakes have potential to enhance or cripple our state's future prosperity.

H.R. 3600 is a modest step in a continuing effort to protect the Great Lakes. Since passage of the Boundary Waters Treaty with Canada in 1909 we have recognized the difficulties in properly managing and protecting this interstate and international resource and the need for coordination of our efforts. H.R. 3600 is a logical extension of an evolving international policy towards the lakes. Recent initiatives include:

**Passage of the Coastal Zone Management Act in 1972 requiring federal programs affecting the Great Lakes to be consistent with federally-approved state plans;

**Adoption of the U.S.-Canadian "Great Lakes Water Quality Agreement of 1978";

**Adoption by all U.S. and Canadian agencies dealing with Great Lakes fisheries of "A Joint Strategic Plan for Management of Great Lakes Fisheries" in 1980;

**A proposal by Michigan's Governor William G. Milliken this year for a similar compact relating to possible water diversions from the Great Lakes Basin;

**A proposal to establish an international network of private conservation interests in the Great Lakes Basin, which will be focus of a "Great Lakes Federation" conference we will conduct next spring.

In the past, federal (and state) programs and research have been fragmented and poorly coordinated relating to fishery management, water diversions, navigation, energy, and pollution control. The key emerging issues which will threaten the lakes, such as air-borne pollution, persistent toxic chemicals, and competition for water consumption, mandate better cooperation between states, between federal agencies, and between the U.S. and Canada. H.R. 3600 will help insure progress continues.

In the face of our progress in establishing better coordination of efforts to protect the Great Lakes, we have been rudely reminded of how fragile are our gains. A change in Administration can destroy overnight research programs and scientific staffs built up over years. Coastal Zone Management Act requirements for meaningful coordination of federal programs with the states would have been gutted by this Administration except for rapid opposition by the public and this Congress. The Great Lakes Basin Commission, which had become an effective voice of interstate communication and a growing force in coordinating Great Lakes research, was abolished this year.

H.R. 3600 will clearly and unequivocally place into law the policy of the United States toward management of the Great Lakes. It is a declaration which the people of my state welcome. It is a logical step in our growing appreciation of the fragile grandeur and the economic importance of this national treasure. It sets into law policies already being pursued to a growing extent by state and federal agencies and commissions towards the Great Lakes. On behalf of the 100,000 members and 400 affiliated organizations of the Michigan United Conservation Clubs, I urge you to approve H.R. 3600.

Mr. **Blanchard.** Fine. Thank you very much. We are going to have some questions, but I think the best thing to do is to move along and finish the other two witnesses. So now, we turn to Mr. Norman Rollar, with the Sierra club in Ann Arbor. Mr. Rollar is a research scientist with the Environmental Research Institute of Michigan, and has been involved with the Sierra Club and other groups, including the Huron Valley Group. He has shown continuing interest in environmental matters and Great Lakes water quality as well.

Thank you for being with us. I will let you proceed in whatever way you see fit.

Mr. **Rollar.** Thank you.

Good morning, my name is Norm Rollar, and I am here today representing the Sierra Club. We appreciate this opportunity to comment on the Great Lakes Protection Act, and, in particular, applaud the efforts of Congressman Blanchard to bring the importance of protecting the Great Lakes resources to the attention of Congress.

In brief, the club welcomes the introduction of the Great Lakes Protection Act and urges its passage. The reasons for our support are many, so many, in fact, that it really emphasizes how truly worthy the Great Lakes are of a congressional policy which recognizes their unique and irreplaceable values.

These values includes supplying citizens in the basin with water for drinking, industry, power, and transportation. The lakes also provide important values by supporting an important but threatened fishery. In addition, they serve as significant habitat for numerous species of waterfowl and wildlife.

They also contain some of the Nation's most important scenic and natural areas, as well as providing outstanding recreational opportunities.

The thrust of my comments today will be directed toward four specific areas of concern in which the club is particularly interested. These are: One, the presence of toxic substances in the Great Lakes; two, potential impacts from energy development, particularly oil and gas drilling; three, the impacts of subsidized winter navigation projects; and, four, diversion of water from the Great Lakes system.

Of these, our area of greatest concern is the persistent presence of toxic pollutants in the Great Lakes. While the last decade has seen great strides in the cleanup of such significant and ubiquitous pollutants as phosphorous, we are still plagued by the presence of heavy metals and chlorinated hydrocarbons, most notably PCBs.

The destruction the lamprey once wreaked upon the Great Lakes fishery is now being echoed by the effects of PCBs. The presence of PCBs in the Great Lakes has, for example, resulted in Michigan fishing licenses carrying warnings that only limited amounts of certain Great Lakes fish should be eaten.

The cost of this tragedy is immeasurable, and at the present time, solutions to the problem are unclear. Let me explain why.

Recent budget cuts have curtailed many Great Lakes research programs at a time when important findings are only just emerging. For example, studies by the Great Lakes Fishery Lab in Ann

Arbor and EPA's Argonne Lab indicate that up to 90 percent of the PCB contamination in Lake Superior may be from airborne fallout.

Other research indicates that airborne deposition may be responsible for other pesticides such as DDT continuing to be deposited in the lakes. This is a new threat, a newly realized threat. To learn how to meet this threat, we must have further research to learn the most effective way to deal with this problem.

Another area of our concern that will require the most stringent scrutiny is offshore oil and gas development. The concerns about oil and gas drilling in the Great Lakes are the same as those in the oceans, only they are greatly magnified. The lakes have neither the capacity for dilution or dispersion of oil contamination that the oceans have.

Largely, this is a consequence of the climatic characteristics of our region. They are substantially different from the offshore marine oil drilling environments.

The presence of ice, in particular, in the Great Lakes introduces several complications, including uncertainties about the dispersion of oil under ice in the event of an accident, and the resulting difficulties of any cleanup operations.

While dry gas development has taken place in the lower lake basin for many years without any serious incidents, new interest in the Niagara Reef oil deposits offshore has increased speculation about actually drilling in Lakes Michigan and Huron.

Certainly, the world's greatest freshwater supply should be the last place subjected to the risks of offshore development.

The third concern I wish to make felt is that while man's engineering capabilities continue to increase, the tolerances for modification of the Great Lakes are far less flexible. A case in point is the pressure that expansion of shipping and navigation activities and facilities will place on the lakes.

Winter navigation has documented impacts, particularly in narrow connecting channels which range from increased turbidity in the water to actual shoreline erosion. While Great Lakes shippers are eager to ship large loads in big ships, this would require an expansion of the lock facilities at Sault Ste. Marie, dredging and deepening of our existing shipping channels and expansion of existing harbor facilities.

The environmental impacts include acceleration of channel flow, the resuspension of polluted bottom sediments, loss of shoreline, disturbance of wildlife, habitat, and more.

Yet, the navigation improvements enjoyed by Great Lakes shipping are largely provided by Federal dollars. In effect, this means that the same Federal dollars that subsidize Great Lakes winter shipping may also end up subsidizing deterioration of the Great Lakes environment. Shipping has both environmental and economic costs. And there are limits to which the Great Lakes can support both.

The final issue I would like to bring up to your attention today is diversions of water from the Great Lakes system, a topic we have already heard quite a bit about this morning.

In recent times, and specifically in the last year, there has been increased public speculation that Great Lakes water could be available for diversion projects to other watersheds for agricultural irrigation, coal slurry, or municipal uses.

We feel that it is critical that the Great Lakes not be viewed as a bottomless well to the Nation's water needs. The lakes are not an oversized reservoir. What they are is a complex living ecosystem that cannot be casually tampered with without serious consequences.

Significant diversions from the lakes could result in the loss of wetlands, alter fish spawning habitat, impair navigation, and reduce the potential for hydroelectric power generation.

In a sense, there is no extra water to sell, trade, or give away. The Great Lakes water resource has a full time, ecological commitment in the basin. Balancing the many demands that diversion use has placed on the Great Lakes requires the recognition of the system's ecological and biological limits.

The ecosystem concept applied to the Great Lakes is graphically illustrated by a satellite photograph which I have brought with me. Notice that the vegetation, water flow, and weather patterns do not stop at international boundaries. In fact, no political boundaries are visible at all from space. What you do see is a snapshot taken from 1,000 kilometers above the Earth's surface that shows a living ecosystem which must be treated as an entity if it is to be preserved and enhanced.

To conclude, I highlighted for you the Sierra Club's greatest concerns for the Great Lakes resource as we move into the 1980's. Certainly, the Great Lakes should be recognized as a nationally, and globally, significant resource. Man's prudent use of the lakes for industry, commerce, drinking water, food supplies and transportation can continue, but only if the survival of the Great Lakes ecosystem is given the highest priority.

Again, the Sierra Club welcomes the introduction of the Great Lakes Protection Act and urges its passage. But we add a caution that the problems facing the Great Lakes will require the continuing attention of this body and others if the lakes are to remain the outstanding resource that they are today. Thank you.

[The prepared statement of Mr. Rollar follows:]

Statement of the Sierra Club Presented by Norm Rollar

Good morning. My name is Norm Rollar and I am here today representing the Sierra Club. We appreciate this opportunity to comment on the Great Lakes Protection Act, and applaud the efforts of Congressman Blanchard to bring the importance of protecting the Great Lakes Resource to the attention of the Congress.

The Great Lakes are truly worthy of a congressional policy which recognizes the unique and irreplaceable values.

The lakes supply citizens in the basin with drinking water, water for industry, water for power and water for transportation. They also support an important but threatened fishery, serve as significant habitat to numerous species of waterfowl and other wildlife, and provide some of the nation's most important scenic natural areas and recreational opportunities.

We are fortunate that Congress has had the foresight to protect such outstanding features as Isle Royale National Park, and Pictured Rocks, Apostle Islands, Sleeping Bear Dunes and Indians Dunes National Lakeshores.

Public support for the protection of these areas is indicative of the deep concern and firm commitment that Great Lakes citizens have for the protection of the lakes.

While the Clean Water Act and state and international programs have helped to restore the lakes from the pollution that labeled Lake Erie as "dead" a decade ago, the Great Lakes face new threats which will require firm policies and keen foresight. The Great Lakes Protection Act offers a foundation for both.

There are four specific areas of concern that I would like to comment on today. Diversions of water from the Great Lakes system, the impacts of subsidized navigation projects, potential impacts from oil and gas drilling in the Great Lakes, and the presence of toxic substances.

In recent times, and specifically in the last year there has been increased public speculation that Great Lakes water could be available for diversion to other watersheds, for agricultural irrigation, coal slurry and municipal uses. It is critical that the Great Lakes not be viewed as the bottomless well for the Nation's water needs. The lakes are not an oversized reservoir, they are a complex living eco-system that cannot be casually tampered with without serious consequence. Significant diversions from the lakes could result in the loss of wetlands, alter fish spawning habitat, impair navigation and reduce hydroelectric power generation. In a sense, there is no extra water to sell, trade or give away. The Great Lakes Water Resource has full-time commitment in the Basin. Balancing the many demands that diversion uses place on the Great Lakes requires a recognition of the Lake system's ecological limits.

While man's engineering capabilities continue to increase, the tolerances of the Great Lakes are less flexible. A case in point is the pressure that expansion of shipping and navigation facilities will place on the lakes. Winter navigation has had documented impacts particularly in narrow connecting channels, ranging from increased turbidity in the water to shoreline erosion. While Great Lakes shippers are eager to ship larger loads on bigger ships, this would require expansion of the lock facilities at Sault St. Marie, dredging and deepening shipping channels, and expansion of harbor facilities. The environmental impact could include acceleration of the channel flow, the resuspension of polluted bottom sediments, loss of shoreline and more. The navigation improvements enjoyed by Great Lakes shipping are largely provided by federal dollars. The same dollars that subsidize Great Lakes shipping are subsidizing the deterioration of the Great Lakes environment. Shipping has both environmental and economic costs, and there are limits to the systems which support both.

Another area of concern that will require the most stringent scrutiny is offshore oil and gas development. The concerns about oil and gas drilling in the Great lakes are the same as those in the oceans, only greatly magnified. The lakes have neither the capacity for dilution or dispersion of oil contamination that the oceans have. Climatic factors are substantially different. The very presence of ice introduces several complicating factors, including uncertainties about the dispersion of oil under ice in the event of an accident, and the resulting difficulties in clean up.

While "dry gas" development has taken place in the lower lake basin for many years without serious incident, new interest in the Niagaran reef oil deposits has increased speculation about drilling in Lakes Michigan and Huron. Certainly the world's greatest fresh water basin should be the last place subjected to the risks of offshore oil development.

A final area of concern is the persistent presence of toxic pollutants in the Great Lakes. While the last decade has seen great strides in the clean-up of such prolific pollutants as phosphorous, we are still plagued by the presence of heavy metals and chlorinated hydrocarbons, most notably PCB. The destruction that lamprey once wrecked on the Great Lakes fishery is now being echoed by the effects of P.C.B. Michigan fishing licenses carry warnings that only limited amounts of certain Great Lakes fish should be eaten. The cost of this tragedy is immeasurable and the solutions are uncertain.

Lake Erie is in a sense, fortunate, for of the Lakes it has the greatest ability to cleanse itself. It is shallow and the water moves through the Lake faster than any of the others. But, while it may take 15 years to restore Lake Erie from the presence of certain pollutants, the same process in Superior may take two or three hundred years. Clean up of the Great Lakes will take money, research, and cooperation between local, state, federal and international agencies. The recent budget cuts have curtailed many Great Lakes programs at a time when important findings are emerging. For example, research from the Great Lakes Lab, and EPA's Argon Lab indicates that up to 90 percent of the PCB contamination in Lake Superior may be from airborne fallout. Other research indicates that pesticides such as DDT continue to be deposited in the lakes from atmospheric deposition. Even toxiphene a pesticide used to control the boll weevil, and not used in the Great Lakes basin, is showing up in trace amounts, again, from atmospheric deposition.

It is thus critical that research be able to continue to help identify the source and affects of these pollutants, and to suggest options for controlling their presence in the Great Lakes.

I have highlighted for you our greatest concerns for the lake resource as we move into the nineteen-eighties. Certainly the Great Lakes should be recognized as a nationally, and globally significant resource. Man's prudent use of the lakes for industry, commerce, drinking water, food supplies and transportation can continue, but only if the survival of the lake ecosystem is given the highest priority. Again, we welcome the introduction of the Great Lakes Protection Act and urge its passage, but we add our caution that the problems facing the Great Lakes will require the continuing attention of this body and others if they are to remain the outstanding resource they are today.

Mr. **Blanchard**. Thank you.

Now, Mr. David Jasperse, with Project Lakewell in Holland, Mich.

Mr. **Jasperse**. I appreciate this honor and opportunity to speak before you today to testify on behalf of H.R. 3600. I am the organizer and coordinator of several statewide programs for the West Michigan Environmental Action Council, and recently was selected to be the first executive director of Project Lakewell, a grassroots citizens organization based in Holland, Mich., with chapters in several other Lake Michigan communities.

Project Lakewell is devoted to improving the environment and preserving the maritime history of Lake Michigan and the other Great Lakes through educational programs.

The Great Lakes, the people living along their shoreline, and the Nation needs Section 201 of H.R. 3600 for reasons of human health and improved management of a valuable resource.

There are three essential ingredients to support basic human life: Food, shelter, and fresh water. The Great Lakes contain 95 percent of all the fresh water in the United States, and 20 percent of the world's supply.

It should therefore be the policy of the United States to maintain and protect the environmental quality of this resource so basic to human life. However, the environmental quality of the Great Lakes needs a renewed commitment to maintenance and protection.

Specific problems needing increased Federal attention include atmospheric fallout of hazardous materials, nonpoint source runoff, point source discharge, and hazardous waste in the bottom sediments.

Atmospheric fallout of heavy metals and organic compounds including polychlorinates—PCBs, DDT, et cetera—and polybromates is a serious problem. Fifty-three percent of the PCBs and equally high percentages for other hazardous waste pollutants in Lake Michigan came from atmospheric sources.

Due to atmospheric fallout of hazardous materials, lakes on Isle Royale National Park and South Manitou Island in Sleeping Bear Dunes National Lakeshore have health advisories on certain species of fish.

These health advisories, which are similar for those issued by the Michigan Department of Public Health on nine species of fish in one or more of the Great Lakes, state that no woman of childbearing age should eat the listed fish and that all other persons should eat no more than 8 ounces, approximately one meal, per week.

The blame for this sad situation belongs in part on Federal air emission policies which support construction of taller smoke stacks to expand the dispersion area of air emissions, the dilution method of improving the environment, rather than reducing the actual amount of hazardous materials emitted.

The Great Lakes are in need of Federal action to improve and monitor the water quality of point source discharges. The National Pollution Discharge Elimination System, administered by the States and a cornerstone of the Clean Water Act, is threatened and needs attention.

State funds to provide for adequate water quality monitoring are decreasing as State budgets are squeezed interstate competition for industry increases and the U.S. Environmental Protection Agency funding is reduced.

That can only result in a decreased enforcement, surveillance, and monitoring effort, a decrease in water quality in the tributaries of the Great Lakes, and a decrease in the water quality of the Great Lakes themselves.

Nonpoint source runoff is a problem requiring additional Federal attention. In Milwaukee, recent studies indicate that up to 90 percent of the city's water quality problem is from nonpoint source runoff.

Additionally, salt used on winter roads and part of the spring met waters poses a devastating impact on Lakes Michigan, Huron, and Superior. Lake Michigan's salinity, now between four and six parts per million, has increased at the rate of 3 percent per year for the last 20 years.

Lakes Michigan, Superior, and Huron are nutrient-poor lakes, and therefore cannot buffer this increased salinity. This long-term increase in salinity is nearing a point where blue-green algae production increases and diatom production decreases.

Diatoms are the basic plant life in Lakes Michigan, Huron, and Superior. Altering the quantity of the basic plant life in favor of a less valuable forage plant—blue-green algae—would have a serious negative impact on the Great Lakes.

In response to Representative Hertel's question about oil spills and the Coast Guard, the greatest source of oil pollution in the Great Lakes comes from do-it-yourself oil changers dumping their used oil into sewer systems within the Great Lakes.

The Federal Government, through the Army Corps of Engineers, is responsible for much of the dredging operations in Great Lakes harbors. The sediments in these harbors often contain the highest concentration of hazardous materials relative to other bottom sediments in the Great Lakes.

There needs to be more research on the environmental and health impacts in order to properly make management decisions on these hazardous sediments. These decisions include whether the sediments should be left where they are or dredged and deposited in environmentally sound landfills.

The dangers of just leaving the sediments in the harbors and the negative economic impact from not dredging are obvious. However, dredging resuspends a sizable portion of the hazardous waste sediments into the water column.

Once resuspended, the hazardous materials reenter the food chain to the detriment of human health. With the support of the Federal Government, new technologies need to be developed to virtually eliminate the resuspension of sediments during dredging operations.

The Great Lakes are in need of added Federal attention regarding the multiple uses of the waters, fisheries, and other resources within the Great Lakes. The Great Lakes are used by 40 million people living in two countries, two provinces, nine States, and hundreds of counties, townships, and municipalities.

They use the water resources of the Great Lakes for recreation, food, drinking water, and economic needs. Industries which rely on the waters of the Great Lakes for transportation and industrial processes account for 25 percent of the Nation's industrial output.

There are increasing attempts by States outside of the Great Lakes basin to draw off Great Lakes waters. However, industries and municipalities within the Great Lakes basin withdraw and return almost 2 billion gallons per year. This is expected to increase to more than 8 billion gallons by the year 2010.

The Federal Government, if not specifically prohibiting the drawdown of the Great Lakes water for use outside of the Great Lakes basin, then should provide that any water projects involving the withdrawal of water out of the basin not be supported with Federal money.

As recent Federal court decisions indicate regarding the Great Lakes fishery, the Federal Government has a significant degree of responsibility over this resource. The Federal Government is to respond to these court decisions in a positive manner and take a more active role, in cooperation with the States, in fisheries research, and management.

Shoreline management of the Great Lakes is woefully inadequate. The Army Corps of Engineers is responsible for approving construction of jetties, seawalls, and other structures to retard shoreline erosion. However, the cause of continuing high water levels in the Great Lakes, currently out of synch with the cycle Michigan Representative Tom Anderson spoke of previously, are little understood and the corps' management practices relative to shoreline erosion is little more than a band-aid approach.

In response to Representative Lundine's question, there is a net outflow of 5,000 cubic feet per second from the Great Lakes system. However, the greatest loss of water is through evaporation.

Management of a comprehensive pollution abatement program in the Great Lakes required Federal involvement in accurately understanding the impact each pollutant source has on Great Lakes water quality. These pollutant sources include atmospheric fallout, point source discharges, nonpoint source runoff ground water flow and bottom sediments.

A clear and concise understanding of the problem relates closely to the use of the most cost-effective methods to reduce or eliminate the problem. Except for point source discharges, there is little in the way of precise information on the pollutant sources beyond which says, "There is a problem."

In cleaning up the Great Lakes, it must be remembered that they are lakes and not oceans. Pollutants have a long retention time in any of the Great Lakes—often taking decades for an individual lake to completely flush out its waters, only to go into another lake.

Also, while Lake Erie has become cleaner than predicted due to sedimentation of pollutants, these pollutants still lie beneath the waters and in the system.

The development of a Great Lakes research office, as provided under section 203 is heartily encouraged if it can build upon, coordinate, and not duplicate the Large Lakes Research Laboratory and other research efforts currently under way.

As my earlier testimony points out, there are several specific areas where our knowledge of the Great Lakes, their pollutant sources, and water resources need to increase.

It is through increased knowledge, the broad dissemination of information and its wise use, that problems may be addressed and our past mistakes corrected.

Thank you for this opportunity to testify before you today.

[The prepared statement of Mr. Jasperse follows:]

TESTIMONY OF DAVID E. JASPERSE ON H.R. 3600 BEFORE THE COMMITTEE ON SCIENCE AND TECHNOLOGY, TUESDAY, DECEMBER 15, 1981.

I APPRECIATE THIS HONOR AND OPPRTUNITY TO SPEAK BEFORE YOU TODAY TO TESTIFY ON BEHALF OF H.R. 3600. I AM THE COORDINATOR OF SEVERAL PROGRAMS FOR THE WEST MICHIGAN ENVIRONMENTAL ACTION COUNCIL AND RECENTLY WAS SELECTED TO BE THE FIRST EXECUTIVE DIRECTOR OF PROJECT LAKEWELL, A GRASSROOTS CITIZENS ORGANIZATION BASED IN HOLLAND MICHIGAN AND DEVOTED TO IMPROVING THE ENVIRONMENT AND PRESERVING THE MARITIME HISTORY OF LAKE MICHIGAN AND THE OTHER GREAT LAKES THROUGH EDUCATIONAL PROGRAMS.

THE GREAT LAKES, THE PEOPLE LIVING ALONG THEIR SHORELINE AND THE NATION NEEDS SECTION 201 OF H.R. 3600 FOR REASONS OF HUMAN HEALTH AND MANAGEMENT OF A RESOURCE.

GREAT LAKES ISSUES AS THEY RELATE TO HUMAN HEALTH

THERE ARE THREE ESSENTIAL INGREDIENTS TO SUPPORT BASIC HUMAN LIFE: FOOD: SHELTER; AND FRESHWATER. THE GREAT LAKES CONTAIN NINETY-FIVE (95) PERCENT OF ALL THE FRESHWATER IN THE UNITED STATES AND TWENTY (20) PERCENT OF THE WORLD'S SUPPLY. IT SHOULD, THEREFORE, BE THE POLICY OF THE UNITED STATES TO MAINTAIN AND PROTECT THE ENVIRONMENTAL QUALITY OF THIS RESOURCE SO BASIC TO HUMAN LIFE.

HOWEVER, THE ENVIRONMENTAL QUALITY OF THE GREAT LAKES HAS BEEN NEITHER MAINTAINED NOR PROTECTED. SPECIFIC PROBLEMS NEEDING INCREASED FEDERAL ATTENTION INCLUDE ATMOSPHERIC FALLOUT OF HAZARDOUS MATERIALS, NON-POINT AND POINT SOURCE RUNOFF AND DISCHARGE AND HAZARDOUS WASTES IN THE BOTTOM SEDIMENTS.

ATMOSPHERIC FALLOUT OF HEAVY METALS AND ORGANIC COMPOUNDS INCLUDING POLY-CHLORINATES (PCB, DDT, DIOXIN, ETC.) AND POLY-BROMATES IS A SERIOUS PROBLEM. FIFTY-THREE (53) PERCENT OF THE PCB AND EQUALLY HIGH PERCENTAGES FOR OTHER HAZARDOUS WASTE POLLUTANTS IN LAKE MICHIGAN CAME FROM ATMOSPHERIC SOURCES. DUE TO

ATMOSPHERIC FALLOUT OF HAZARDOUS MATERIALS, LAKES ON ISLE ROYALE NATIONAL PARK AND SOUTH MANITOU ISLAND IN SLEEPING BEAR DUNES NATIONAL LAKESHORE HAVE HEALTH ADVISORIES ON CERTAIN SPECIES OF FISH.

THESE HEALTH ADVISORIES, WHICH ARE SIMILAR FOR THOSE ISSUED BY THE MICHIGAN DEPARTMENT OF PUBLIC HEALTH ON NINE SPECIES OF FISH IN ONE OR MORE OF THE GREAT LAKES, STATE THAT NO WOMAN OF CHILD BEARING AGE SHOULD EAT THE LISTED FISH AND THAT ALL OTHER PERSONS SHOULD EAT NO MORE THAN EIGHT (8) OUNCES (ONE MEAL) PER WEEK.

THE BLAME FOR THIS SAD SITUATION BELONGS IN-PART ON FEDERAL AIR EMISSION POLICIES WHICH SUPPORT CONSTRUCTION OF TALLER SMOKE STACKS TO EXPAND THE DISPERSION AREA OF AIR EMISSIONS -- THE DILUTION METHOD OF IMPROVING THE ENVIRONMENT --RATHER THAN REDUCING THE ACTUAL AMOUNT OF HAZARDOUS MATERIALS EMITTED.

THE GREAT LAKES ARE IN NEED OF FEDERAL ACTION TO IMPROVE AND MONITOR THE WATER QUALITY OF POINT SOURCE DISCHARGES. THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM, ADMINISTERED BY THE STATES AND A CORNERSTONE OF THE CLEAN WATER ACT, IS THREATENED AND NEEDS ATTENTION. STATE FUNDS TO PROVIDE FOR ADEQUATE WATER QUALITY MONITORING ARE DECREASING AS STATE BUDGETS ARE SQUEEZED, INTERSTATE COMPETITION FOR INDUSTRY INCREASES AND UNITED STATES ENVIRONMENTAL PROTECTION AGENCY FUNDING IS REDUCED. THIS CAN ONLY RESULT IN A DECREASED ENFORCEMENT, SURVEILLANCE AND MONITORING EFFORT, A DECREASE IN WATER QUALITY IN THE TRIBUTARIES OF THE GREAT LAKES AND A DECREASE IN THE WATER QUALITY OF THE GREAT LAKES THEMSELVES.

NON-POINT SOURCE RUNOFF IS A PROBLEM REQUIRING ADDITIONAL FEDERAL ATTENTION. IN MILWAUKEE, RECENT STUDIES INDICATE THAT UP TO NINETY (90) PERCENT OF THE CITY'S WATER QUALITY PROBLEM IS FROM NON-POINT SOURCE RUNOFF.

SALT USED ON WINTER ROADS AND PART OF THE SPRING MELT WATERS POSES A DEVASTATING IMPACT ON LAKE MICHIGAN AND LAKES HURON AND SUPERIOR. LAKE MICHIGAN'S SALINITY, NOW BETWEEN FOUR (4) AND SIX (6) PARTS PER MILLION,HAS INCREASED AT THE RATE OF THREE (3) PERCENT PER YEAR FOR THE LAST TWENTY YEARS. SINCE LAKE MICHIGAN AND LAKES HURON AND SUPERIOR ARE NUTRIENT-POOR LAKES, THIS LONG-TERM INCREASE IN SALINITY IS NEARING A POINT WHERE BLUE-GREEN ALGAE PRODUCTION INCREASES AND DIATOM PRODUCTION DECREASES. DIATOMS ARE THE BASIC PLANT LIFE IN LAKES MICHIGAN, HURON, AND SUPERIOR. ALTERING THE QUANTITY OF THE BASIC PLANT LIFE IN FAVOR OF A LESS VALUABLE FORAGE PLANT (BLUE-GREEN ALGAE) WOULD HAVE A SERIOUS NEGATIVE IMPACT IN THE GREAT LAKES.

THE FEDERAL GOVERNMENT, THROUGH THE ARMY CORPS OF ENGINEERS, IS RESPONSIBLE FOR MUCH OF THE DREDGING OPERATIONS IN GREAT LAKES HARBORS. THE SEDIMENTS IN THESE HARBORS OFTEN CONTAIN THE HIGHEST CONCENTRATION OF HAZARDOUS MATERIALS RELATIVE TO OTHER BOTTOM SEDIMENTS IN THE GREAT LKAES. THERE NEEDS TO BE MORE RESEARCH ON THE ENVIRONMENTAL AND HEALTH IMPACTS IN ORDER TO PROPERLY MAKE MANAGEMENT DECISIONS ON THESE HAZARDOUS SEDIMENTS. THESE DECISIONS INCLUDE WHETHER THE SEDIMENTS SHOULD BE LEFT WHERE THEY ARE OR DREDGED AND DEPOSITED IN ENVIRONMENTALLY SOUND LANDFILLS.

THE DANGERS OF JUST LEAVING THE SEDIMENTS IN THE HARBORS AND THE NEGATIVE IMPACT ECONOMIC IMPACT FROM NOT DREDGING ARE OBVIOUS. HOWEVER, DREDGING RE-SUSPENDS A SIZEABLE PORTION OF THE HAZARDOUS WASTE SEDIMENTS INTO THE WATER COLUMN. ONCE RE-SUSPENDED, THE HAZARDOUS MATERIALS RE-ENTER THE FOOD CHAIN TO THE DETRIMENT OF HUMAN HEALTH. WITH THE SUPPORT OF THE FEDERAL GOVERNMENT, NEW TECHNOLOGIES NEED TO BE DEVELOPED TO VIRTUALLY ELIMINATE THE RE-SUSPENSION OF SEDIMENTS DURING DREDGING OPERATIONS.

GREAT LAKES ISSUES AS THEY RELATE TO RESOURCE MANAGEMENT

THE GREAT LAKES ARE IN NEED OF ADDED FEDERAL ATTENTION REGARDING THE MULTIPLE USES OF THE WATERS, FISHERIES AND OTHER RESOURCES WITHIN THE GREAT LAKES. THE GREAT LAKES ARE USED BY FORTY (40) MILLION PEOPLE LIVING IN TWO (2) COUNTRIES, TWO (2) PROVINCES, NINE (9) STATES AND HUNDREDS OF COUNTIES, TOWNSHIPS AND MUNICIPALITIES. THEY USE THE WATER RESOURCES OF THE GREAT LAKES FOR RECREATION, FOOD, DRINKING WATER, ECONOMIC NEEDS. INDUSTRIES WHICH RELY ON THE WATERS OF THE GREAT LAKES FOR TRANSPORTATION AND INDUSTRIAL PROCESSES ACCOUNT FOR TWENTY FIVE (25) PERCENT OF THE NATION'S INDUSTRIAL OUTPUT.

THERE ARE INCREASING ATTEMPTS BY STATES OUTSIDE OF THE GREAT LAKES BASIN TO DRAW OFF GREAT LAKES WATERS. HOWEVER, INDUSTRIES AND MUNICIPALITIES WITHIN THE GREAT LAKES BASIN WITHDRAW AND RETURN ALMOST TWO (2) BILLION GALLONS PER YEAR. THIS IS EXPECTED TO INCREASE TO MORE THAN EIGHT (8) BILLION GALLONS BY THE YEAR 2010.

THE FEDERAL GOVERNMENT, IF NOT SPECIFICALLY PROHIBITING THE DRAW-DOWN OF THE GREAT LAKES FOR USE OUTSIDE OF THE GREAT LAKES BASIN, THEN SHOULD PROVIDE THAT ANY WATER PROJECTS INVOLVING THE WITHDRAWL OF WATER OUT OF THE BASIN NOT BE SUPPORTED WITH FEDERAL MONIES.

AS RECENT FEDERAL COURT DECISIONS INDICATE REGARDING THE GREAT LAKES FISHERY, THE FEDERAL GOVERNMENT AND NOT THE STATES HAVE RESPONSIBILITY OVER THIS RESOURCE. HOWEVER, THE MANAGEMENT OF THE GREAT LAKES FISHERY HAS BEEN ASSUMED BY STATE GOVERNMENTS IN THE ABSENCE OF A STRONG FEDERAL PROGRAM. THE FEDERAL GOVERNMENT NEEDS TO RESPOND TO THESE COURT DECISIONS IN A POSITIVE MANNER AND TAKE A MORE ACTIVE ROLE, IN COOPERATION WITH THE STATES, IN FISHERIES RESEARCH AND MANAGEMENT.

SHORELINE MANAGEMENT OF THE GREAT LAKES IS WOEFULLY INADEQUATE. THE ARMY CORPS OF

ENGINEERS IS RESPONSIBLE FOR APPROVING CONSTRUCTION OF JETTIES, SEAWALLS AND OTHER STRUCTURES TO RETARD SHORELINE EROSION. HOWEVER, THE CAUSE OF CONTINUING HIGH WATER LEVELS IN THE GREAT LAKES ARE LITTLE UNDERSTOOD AND THE CORPS' MANAGEMENT PRACTICES RELATIVE TO SHORELINE EROSION IS LITTLE MORE THAN A BAND-AID APPROACH.

MANAGEMENT OF A COMPREHENSIVE POLLUTION ABATEMENT PROGRAM IN THE GREAT LAKES REQUIRES FEDERAL INVOLVEMENT IN ACCURATELY UNDERSTANDING THE IMPACT EACH POLLUTANT SOURCE HAS ON GREAT LAKES WATER QUALITY. THESE POLLUTANT SOURCES INCLUDE ATMOSPHERIC FALLOUT, POINT SOURCE DISCHARGES, NON-POINT SOURCE RUNOFF GROUNDWATER FLOW AND BOTTOM SEDIMENTS. A CLEAR AND CONCISE UNDERSTANDING OF THE PROBLEM RELATES CLOSELY TO USE OF THE MOST COST-EFFECTIVE METHODS TO REDUCE OR ELIMINATE THE PROBLEM. EXCEPT FOR POINT SOURCE DISCHARGES, THERE IS LITTLE IN THE WAY OF PRECISE INFORMATION BEYOND THAT WHICH SAYS, "THIS IS A PROBLEM."

IN CLEANING UP THE GREAT LAKES, IT MUST BE REMEMBERED THAT THEY ARE LAKES AND NOT OCEANS. POLLUTANTS HAVE A LONG RETENTION TIME IN ANY ONE OF THE GREAT LAKES--OFTEN TAKING DECADES , FOR AN INDIVIDUAL LAKE TO COMPLETELY FLUSH OUT ITS WATERS. ALSO, WHILE LAKE ERIE HAS BECOME CLEANER THAN PREDICTED DUE TO SEDIMENTATION OF POLLUTANTS, THESE POLUTANTS STILL LIE BENEATH THE WATER AND IN THE SYSTEM.

MY COMMENTS REGARDING SECTION 202 OF H.R. 3600 ARE FEW. THERE NEEDS TO BE MORE EVIDENCE THAN I HAVE SEEN ON THE VALUE OF ADDING ANOTHER LAYER OF BUREAUCRACY IN THE IMPACT STATEMENT PROCESS.

AN IMPROVED A-95 REVIEW PROCESS AND A REVISON TO AND CLOSED SCRUTINY OF THE ARMY CORPS OF ENGINEERS COST/BENEFIT ANALYSIS MAY ALLEVIATE THE NEED FOR A GREAT LAKES IMPACT STATEMENT. FUNDS FOR A GREAT LAKES IMPACT STATEMENT BEYOND THOSE REQUIRED UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT COULD BE BETTER SPENT ON RESEARCH, MONITORING AND ENFORCEMENT.

THE DEVELOPMENT OF A GREAT LAKES RESEARCH OFFICE, AS PROVIDED UNDER SECTION 203 IS HEARTILY ENCOURAGED.IF IT CAN BUILD UPON AND NOT DUPLICATE THE LARGE LAKES RESEARCH LABORATORY.

AS MY EARLIER TESTIMONY POINTS OUT, THERE ARE SEVERAL SPECIFIC AREAS WHERE OUR KNOWLEDGE OF THE GREAT LAKES, THEIR POLLUTANT SOURCES AND WATER RESOURCES NEED TO INCREASE.

IT IS THROUGH INCREASED KNOWLEDGE AND THE BROAD DISSEMINATION OF INFORMATION THAT PROBLEMS MAY BE ADDRESSED AND OUR PAST MISTAKES CORRECTED.

THANK YOU.

The Holland
Sentinel

[illegible] YEAR NO. 72 © 1981, HOLLAND SENTINEL   HOLLAND, MICHIGAN 49423   MONDAY, SEPTEMBER 28, 1981   [illegible] PAGES [illegible]

Road salt threatens Lake Michigan

A federal environmental official speaking at Saturday's Lake Michigan Day events at Hope College said almost all the salt spread on Michigan roads during the winter finds its way into Lake Michigan and poses the greatest hazard faced today by the lake's fish.

Robert Bowden, chief of surveillance and research for the U.S. Environmental Protection Agency, saidthe concentration of salt in the lake is increasing at a greater rate than ever and "there is speculation that it could have some disastrous effects in the near future if it continues unchecked."

This was the second year Lake Michigan Day was held and while the 100 people who attended were down in numbers from last year, organizers were not displeased with this year's event.

Lake Michigan Day was sponsored by Project Lakewell, with the help of Hope College. Lakewell, headquartered in Holland, is a group of concerned people who have been putting on informational activities about the Great Lakes since the organization's formation last year.

David Jasperse with Project Lakewell, said Lake Michigan Day planners were disappointed with the turnout, not to mention the rain on Saturday, but the series of workshops and field trips went on as planned.

Overall, he said the type of information brought out during the day focused on issues important to Ottawa County and all of Western Michigan and the presenters, experts in a variety of environmental fields, did a better job this year than the first year.

Among the presenters was Bowden, whose information about salt levels in Lake Michigan gave the day's participants a good deal of background on a little discussed problem.

Levels of sodium in excess of 5 milligrams per liter inhibit the growth of green algae and diatoms, the best food for game fish, Bowden said.

The salt encourages the growth of blue-green algae, which is an inferior food, he added.

Salt levels are increasing at a rate of 3 percent a year and have tripled over the past 30 years in Lake Michigan, Bowden said. They are now in the range of 4-6 milligrams a liter, he said.

That level could threaten plant life although it is not detectable to human taste, Bowden said.

Lakes Erie and Ontario also have high levels of salt but continue to produce fish because they have more food than Lake Michigan, Bowden said.

The big question about Lake Michigan is "what happens when we damage the quality of a relatively scarce food supply," he said.

Salt is used every winter to control snow and ice on roads in many parts of Michigan.

The city of Holland uses about 2,000 tons of road salt annually to melt ice and snow on city streets and about three tons of calcium chloride, Street Superintendent Richard Kapenga said today. Calcium chloride, a much stronger chemical that is mixed with sand, is used only when the temperature drops below 20 degrees and regular salt becomes ineffective.

Dr. Donald Williams, a chemistry professor at Hope College, said today he has conducted tests in the past to monitor the level of salt in the water that carried through Lake Macatawa and into Lake Michigan. The salt content of the water, he said, is lower than expected due to the high levels of silty sediment in Lake Macatawa that acts as a filter.

The next activity for Project Lakewell is its annual meeting, where new board of directors members will be elected and the group will review the 1981 Lake Michigan Day program and begin planning for the 1982 event.

12 THE HOLLAND SENTINEL Thursday, September 18, 1980

PCB plagues man and nature

The same characteristics that made PCB, polychlorinated biphenyl, a desirable product for industrial use also makes it an environmental hazard, Dr. Irwin Brink, a Hope College chemistry professor, said.

Brink took part in the Lake Michigan Day panel discussion on PCBs at Hope College Saturday with Chuck Pistis, district marine agent for the Michigan Sea Grant Program and Larry Kammer, assistant director of the Lake Michigan Federation.

University of Wisconsin Sea Grant Program studies show PCBs to be highly toxic to animals and man. The Sea Grant Program has studied the PCB problem in the Great Lakes area since 1970.

In humans, PCB poisoning causes acne-like skin eruptions, nausea, vomiting, abdominal pain, swelling, jaundice and fatigue. However, these acute symptons are the result of massive ingestion of PCBs.

But long term exposure to small amounts of PCBs may weaken the body's ability to recover from illness and may affect ability to reproduce, according to the University of Wisconsin report. The reason reproduction may be affected is that PCBs store themselves in fats, and fatty tissue is found in the reproductive areas of animals and humans.

In 1973, the Food and Drug Administration set human ingestion tolerance levels of PCBs at five parts per million for fish and the fat parts of poultry, 2.5 ppm in the fat portion of milk and dairy products, one-half ppm in eggs, two-tenths ppm in infant and junior foods.

Brink, who gave a chemist's perspective of PCBs, said he became interested in the chemical about six years ago when he read a report of a fish kill at a Department of Natural Resources hatchery.

Apparently, almost 100 percent of all the northern pike that were hatched at the fishery died. The report said the best theory for the kill was lethal levels of PCBs. A thorough check was made of the water supply and its route to find the PCBs but no source was located.

The conclusion was that the fish eggs were already contaminated by PCBs. And the fish eggs came from northern pike in Lake Macatawa. Brink checked the sewer plant but saw no evidence that PCBs were dumped in the lake. In 1975 the sediment was checked and PCBs were found.

PCB compounds range from a light oil-like to a thick molasses-like fluid, he said. It is made by bubbling chlorine, a poisonous gas, through the relatively harmless substance called biphenyl. Biphenyl is a white crystal-like substance made up of hydrogen and carbon. The chlorine atoms replace the hydrogen atoms on the biphenyl molecule. The more chlorine atoms that replace hydrogen atoms, the thicker the compound becomes.

He said PCB is an extremely stable compound. It is not easily broken down into smaller chemical substances. It is highly fire resistant, a poor conductor of electricity, does not dissolve in water but does dissolve readily in fat.

These characteristics made PCB a desirable substance for industrial use. Currently it is used in closed systems such as electrical capacitors and transformers.

PCBs have been used since 1929. Prior to 1971 it was used in a number of products including adhesives, plastics, paints, varnishes, carbonless carbon paper, hydrolic fluid, rubber and a wide range of consumer goods.

The Monsanto Industrial Chemicals Co. was the sole U.S. manufacturer of PCB and sold it under the trade name of Aroclor. Accompaning the trade name would be the a four digit number. For example, it could read Aroclor 1221. The first two digits (12) means the substance is PCB, Brink explained. The second two digits represent the percentage of chlorine. The number 1221 means PCBs that have 21 percent chlorine.

In 1977 the production of PCBs was halted in the United States. But PCBs continue to be produced in Germany, France, Italy, the Soviet Union and Spain, he said.

One problem with PCBs is their stability, he said.

"Because they are so stable once they get out into the world they stay there," he said.

No one knows how long it takes PCBs to break down.

And PCBs are bioaccumulative. For example, small fish eat food laced with PCBs. They are eaten by larger fish that, in turn, are eaten by larger fish, which are eaten by man. PCBs accumulate in animal fat and are passed on to the next predator.

PCBs are found almost everywhere on earth. In fact, PCBs were found in penguins in the Antarctica, Brink said. Because it is fire resistant, when products containing PCB are burned, it merely floats skyward with the smoke to be caught in the winds.

According to the University of Wisconsin report, approximately 1.4 billion pounds of PCBs were produced in the United States. Of that amount over half has already entered the environment through discharge to the air, land and water.

Groundwater's vulnerability to man articulated during Lake Michigan Day

by Ron DeKett

> The moral is, that anytime we take any of these actions, we have to give thought to the impact on the groundwater table.'

Every manmade modification of Michigan's surface can alter the flow of groundwater, and ultimately may effect the Great Lakes.

Subdivisions, parking lots, ditches, roads, landfills, and even groundwater wells can change the groundwater's direction of flow and the level of the water table, according to Robert Reinking, associate professor of geology at Hope College in Holland.

"The moral is, that anytime we take any of these actions, we have to give thought to the impact on the groundwater table," Reinking said.

Reinking was speaking on the topic of groundwater on Sept. 26 at Hope College during Lake Michigan Day, sponsored by Project Lakewell. Project Lakewell is an organization based in Holland that is dedicated to the preservation and teaching of the history, culture, folklore, and environment of Lake Michigan and the Great Lakes.

Specializing in the study of the geology and groundwater near Holland-area landfills, Reinking, in 1974, was the first authority to warn of the pollution dangers at the Southwest Ottawa County Landfill in Park Township north of Holland.

That landfill is scheduled to be closed this fall because state and county officials have determined that it is contaminating the groundwater. Municipal water was extended to residents who live in the path of the pollution plume which is traveling in a south-westerly direction.

Currently, Reinking is studying the landfill in Saugatuck Township that is owned by Douglas and Saugatuck villages, and the township, but operated by Larry's Leftovers, a refuse-collecting firm in Saugatuck.

The groundwater system is intimately tied to the surface water system, Rinking said, because groundwater eventually reaches the surface.

"Any problem or condition that develops in the groundwater may eventually impact on the Great Lakes," he said.

The level and speed of contamination of groundwater depends on the geology of the area, he said. The types of soil determines the rate of flow of groundwater, Reinking said.

If the soil is porous, meaning it has pores that hold water, and is permeable, which means the pores are connected, then the groundwater flows readily. That results in the ability to obtain groundwater from wells for domestic drinking supplies.

Much of Ottawa County, particularly the west portion, is composed of coarse-grain sand, which has high porosity and is highly permeable, Reinking said. As a result, most of the drinking water in Ottawa County comes from groundwater wells.

The water table is a common measure of water depths, Reinking said, and it fluctuates from season to season and yer to year. Generally, the water table is higher in the spring and summer than in the fall and winter, he said.

In the area of the Southwest Ottawa County Landfill, the water table extends from ground level to 15 to 18 feet below the surface, Reinking said. The fluctuating water table and the highly permeable soil makes the groundwater particularly vulnerable to outside influences. The landfill is the most obvious example, he said.

The geological makeup of the soil can result in more than one source of groundwater, Reinking said. In effect, the first layer of groundwater would be shielded by the second layer of groundwater by impermeable soil, he explained.

If the first level of groundwater is contaminated, it is possible that the second level has remained clean, Reinking said. That geological formation can mean that homeowners can tap into clean water at the second level if the first level has been polluted, he said.

Two problems crop up when the groundwater becomes contaminated, one immediate, and the other long range, Reinking said.

The most immediate danger is the health hazard posed to persons who get their drinking water from contaminated groundwater. The solution is to make an alternative water supply available to the affected citizens, he said.

The long range problem is the environmental damage, Reinking said. The solution to that problem is costly and time-consuming.

When faced with polluted groundwater, the first step is to cut off the source of the contamination, Reinking said. In the case of a landfill that means closing it, and placing an impermeable material on the top so that rainwater will not filter through and leach contaminants into the groundwater. The most difficult achievement is to clean up the existing pollution already in the groundwater, Reinking said. A purge-well system using activated charcoal has been proposed to clean the groundwater pollution at the Southwest Ottawa County Landfill. Using that method, wells are drilled in strategic locations at the site. Water is pumped out of the ground and is passed through large containers filled with activated charcoal. Water is then returned to the ground at a different site.

The system not only intercepts contaminated groundwater but also reverses the flow of groundwater that already has run past the well site.

"If you have an area of contamination, you can draw it into the well by proper placement of wells and the use of the cone of depression," Reinking said.

A cone of depression results whenever water is pumped from a well. The configuration of the groundwater level beneath the well takes on the shape of an ice-cream cone.

"Whether or not it is effective, I have serious questions," Reinking said. "My personal view is there is a reasonably good chance that before the (contaminated) groundwater reaches Lake Michigan, it will probably be cleaned up."

The soil acts as a filtering agent and strips pollutants from the groundwater, Reinking said. If the source of contamination is eliminated, then nature will gradually clean up man's mess, he said.

Reinking admitted that using nature's solution could take decades, and he said that method would be trading contaminated water for contaminated soil. He said there would be little likelihood of crops absorbing the pollutants from the soil and passing them to consumers because the level of the pollution plume is deeper than 20 feet, and getting deeper as time passes.

ADVANCE — October 13, 1981

Mr. **Blanchard**. Well, I want to thank all three of you for coming here, and for being as thoughtful and as complete as you have been. I think your testimony, if nothing else, truly underscores the need for continued monitoring, research, understanding, enforcement of and concern over the lakes at all levels, and you underscore the fact that problems haven't gone away because we made some progress in some places.

This, I think, you document very well with your areas of interest.

Let's talk about water diversion. I have joked from time to time that if we are going to divert water, we should charge at least five times the price of a barrel of oil to do it.

But all of you seem to feel that the notion of serious diversion is not just people talking about how they can make a little money, but it is more real. Can you be specific, any of you, on this?

Mr. **Washington**. Well, I think that the facts are before us. We have had a great exodus from the north of people and business and industry, to the south and to the southwest. We know that the Colorado River system, for example, is oversubscribed in terms of its ability to provide water to all of the existing users, let alone the potential growth factor that is there in the Southwest.

When it reaches the ocean, it is just a mere trickle, you know, you can step across it. Imagine that on the St. Lawrence River. We know that the San Joaquin Valley, for instance, has become depressed to such an extent, that aquifer, that even if there was a source of water sufficient to replenish it, it couldn't replenish itself because its geological features have changed so dramatically.

Now, what is going to happen to these people? Are they going to get down there, are they going to continue to grow; is business and industry going to flourish down there in the absence of water? Of course not. It can't.

And I think Representative Anderson put it very succinctly when he said that, quoted President Reagan saying, "Vote with your feet," well, that is fine, maybe we will see some of these people coming back our way.

It seems to me that we have certain resources that we are going to have to rely on in the Midwest, particularly in the Great Lakes Basin in order to revitalize our economy and to diversify our economic base.

And the very life blood of all of those things is going to be fresh water in an ample supply. So we can't afford to let it get away from us. We have one major diversion now, that being at the Chicago River. Just in the last few weeks, we have heard rumblings about a proposal from Montana to divert, I believe, some 4 billion gallons of water daily through Wisconsin out of Lake Michigan.

Given the history of the United States, recognizing that money at various periods of time in our history has seemed to be no object, and given the understanding that a great many projects which we do have dubious, at best, cost-benefit ratios, it is not inconceivable, I don't think, to any of us, to recognize that the Federal Government has the ability to divert this water if they want to, money not being an obstacle, technology not being an obstacle, it can be done.

Mr. **Jasperse**. I would just like to echo Mr. Washington's comments. It has been the policy of the Government to provide Federal funds for western water projects as well as those in the East. Callico Dam, Red River, a number of others.

The policy of the Federal Government in terms of diverting significant amounts of water to the south and to the west is historically proven and that is why there is a very deep concern in the Great Lakes area.

Mr. WASHINGTON. I think it is abominable to think that we who sit on top of 20 percent of the fresh water in the entire world pay more for our drinking water and water for other uses than people who live in the most arid parts of our Nation pay for their water, and that is because the Congress has subsidized these projects.

That is an unthinkable thing.

Mr. BLANCHARD. It is unthinkable that in an era——

Mr. WASHINGTON. But factual.

Mr. BLANCHARD. That is right. And in an era of limiting food for children and loans for students and social security for the elderly, we continue to build these Rube Goldberg concoctions out west to encourage, and subsidize, essentially——

Mr. WASHINGTON. Some of our Congressmen have been known to lose sight of their high environmental ethics when it comes to a water project in their backyard, I might add.

Mr. BLANCHARD. That is why you need to have 435 of us here, because, presumably those things can cancel out. We can all get very parochial when we are dealing with our own congressional districts, so that is a given in this system.

Mr. ROLLAR. I think we also need to be concerned about some of the problems associated with water diversion projects that will crop up in our own Great Lakes region if such projects are implemented.

For example, if you remove water, you are going to be affecting navigation. There is simply less water to float a boat in, if the lake levels are lowered. That could generate the need for dredging projects, it could limit the size of certain boats that can go through areas, and, as we have heard, since there is a cyclic pattern to the water level in the Great Lakes, it could also have an effect on the region's fish and wildlife habitat.

When the lakes are at their lowest levels, you find only a very small amount of the critical habitat that many fish, wildlife, and water fowl need for breeding and other life support activities. If you further lower the lake levels, you will be shrinking this habitat perhaps beyond the critical levels needed to sustain some species.

So, you are in a situation where there are real pinch periods. Thus, while you have high lake levels, lowering the lake a foot may not mean anything; but, at the bottom of that cycle, when you have a minimal amount of habitat available, if you further lower the lake levels you may be pushing some species right off the map.

Another important point is that diversions are also likely to affect our tourism industry. If you create a large mass of sandbars by lowering lake levels people cannot bring their boats in close to shore, and property values will decrease; the amount of sport fishing that can be conducted in certain areas will also be reduced due to the destruction of habitat, and the pleasure that the persons can derive fishing from the shoreline will be reduced as well.

So, before we give any water away, we need to balance any possible reason for doing it against what it means in our own backyard, and what it costs to the citizens of the Great Lakes.

Mr. **Blanchard**. We may well need to have some specific language on diversion in this bill. We are still not sure what final form the bill will take. As you know, sometimes bills start, and then they have to be improved, sometimes they are gutted, sometimes expanded.

This bill, in all honesty, was written so that it would get to one or two committees that we thought we could get a forum. So we did have—the way we wrote the bill was influenced by the fact that I am on this subcommittee, and Congressman Dennis Hertel is on the other one.

I do agree that the issue of water diversion from the Great Lakes should be addressed before your projections and fears become a reality.

Mr. **Washington**. The focal point——

Excuse me, Congressman.

Mr. **Hertel**. No, I guess I was through, really.

Mr. **Washington**. The focal point of the Midwest Governors Conference this year was Great Lakes diversion, and there is a committee working now to investigate the legality of the interstate pact on diversion, and whether or not such a thing can be created and how it might receive the blessings of Congress, recognizing that any kind of law on diversion would have to consider our treaties with the Canadians.

I would be most interested in your further investigation of this possibility because we've got to recognize that it is a question of State and international policy on something that perhaps could be articulated in this legislation.

Mr. **Blanchard**. Well, the more I am listening, the more I think it probably should be. We are going to need a lot of information on this and many other things.

Congressman Hertel.

Mr. **Hertel**. Well, gentlemen, you have hit a raw nerve today, as far as this person is concerned, when you talked about the imbalance, the time before when you quoted Representative Anderson before talking about the administration's statement about move with your feet, vote with your feet.

You know, the policies, according to David Stockman, he met with the Northeast-Midwest Congressmen last spring and admitted that the budget cuts impacted the Northeast and Midwest far worse than they did other parts of the country.

You point out today that even with the Great Lakes around us that we pay more for our water than do the subsidized parts of the country in the Southwest. It's an irrational policy to do that. It's going to be more costly in the future. We are not going to escape any problems. We have to face up to them. We are talking about wasteful projects that have been mentioned today, Tombigbee by the Federal Government for instance, totally wasteful. We are talking about the fact that Michigan could become like Detroit. That's where I live. It could become a State of old people and poor people, if these policies continue.

Specifically, though, to your area, the three of you being active with citizens groups concerned about the environment, we have talked today about the problem of the Coast Guard being cut back and how that affects oil spills, pollution, and research in many ways, the Great Lakes research across the board being cut back 50 percent, the EPA being cut back drastically. The talk of offshore oil drilling and natural gas drilling, all these things, are just so bad, just nightmares to even have our Government discuss these things.

And we also note at the very same time that one thing that the citizens are united around, and the Gallup Poll show it, 70 percent of the people are concerned that we do not weaken our environmental laws and that we in fact strengthen them, and that is one of the most important concerns obviously for them, their children and their grandchildren in the future.

I think sometimes we just have to show some anger about what's going on. You say that the Governor at the Northeast-Midwest Governors Conference talked about the problem of the Great Lakes, and you know, that's another statement. For years we heard about the need for diversity of Michigan's economy, and nothing has happened.

And I don't think that after all these years that we should just talk about what we should do as far as diversion of Great Lakes waters, but we should talk about action.

And I am putting this question to you, because all three of you are active in the environmental movement, you have had great success before, for instance the time with the bottle bill that you went to the citizens with, and the Governor did help on that and was a leader on that. But you went to the citizens and had them pass something the legislature would not.

And I want to know how you feel about it and what you think we can do, because we are in agreement and many of the Congressman are in agreement and support that we shouldn't do these things that the administration is proposing. But what are we going to do together to stop it? How are we going to reach out to the citizens to stop these insane policies which are going to cost more in the future and in some cases are going to do irrevocable harm?

Mr. WASHINGTON. Now I enumerated in my comments, and it is in my written statement, that we will be trying to put together an organization of concerned citizens. I mean a serious effort, not, this isn't some superficial attempt at putting together a bunch of people that we can circulate or mimeograph a news bulletin to. We have a substantial grant for this purpose, and it is our intention to try and amalgamate all of the concerned bodies in the Great Lakes basin into some action.

And to coordinate that, to have a better line of communication and develop policy, ultimately develop policy for presentation to our Representatives in the Congress, things that we can get behind jointly to protect this Great Lakes system.

We, too, are tired of listening to the rhetoric about diversification of our industry and so forth.

We, too, are tired of the irony of the Congress spending millions of dollars to reestablish our fishery on the one hand and on the other hand allowing the Indians to rape it from shore to shore.

We, too, are tired of hundreds of millions of dollars being spent in water pollution cleanup programs, yet on the other hand the more insidious toxic substances continue to leech into our Great Lakes system, and they continue to be reproduced and continue to be marketed with little or no concern for what the effect of those compounds might be 20, 30, 40, 50, or 100 years from now.

So as has so many times in the past happened, citizens have to be concerned, they have to coordinate their efforts and they have to get the job done, and that is what we intend to do, Congressman.

Mr. **Blanchard**. Mr. Rollar.

Mr. **Rollar**. The Congressmen who represent citizens in the Great Lakes would do a great service to the citizens of the Great Lakes by forming a united front in Congress, and sharing their concerns on a more formal basis; this, in turn, might lead to specific programs that will promote the interests of the region.

We think this would help in another way, too, because such a group would provide a focus for concerned citizens, so that they could more easily make their opinions, desires, and hopes known. Better communication would do a lot to increase recognition of the importance of the Great Lakes as a regional entity of national significance.

Thus, the Sierra Club recommends far more cooperative work by Members of Congress from the Great Lakes region, all of the Representatives from the region.

Mr. **Jasperse**. Under Project Lakewell we already held last year, a leadership work meeting. Citizens groups, League of Women Voters, American Association of University Women, conservation organizations, and Sierra Club members from west Michigan met in Holland to develop a directory of west Michigan organizations concerned with lake and shoreline issues. That directory will be published in January or February of next year, to provide the sort of facilitation of the various interested groups to work together, listing the areas of concern that each individual organization is concerned with, and what sort of resources they can lend to address that particular issue.

Project Lakewell, has held several public seminars on environmental issues, and attached to my testimony are several newspaper articles from those programs.

In fact some of my testimony came specifically from those programs being provided, and I think the role of Project Lakewell and increasing public concern about Great Lakes, and Lake Michigan issues, is the prime role of that organization. We will certainly strive to do the best job we can in improving and increasing citizen involvement and participation in protecting and maintaining the environmental quality of the Great Lakes.

Mr. **Hertel**. Let me say I do very much appreciate what you have done in the past and what you are doing now and with the other people that have testified today, but maybe it's time to think about organizing on a statewide level and regional level that's never been seen before around the environment.

And maybe we should talk about having some State conferences, maybe one tricounty and maybe one up in Lansing or up north and inviting all sorts of groups. You mention the League of Women Voters, some groups beyond that that even have not been in the forefront of environmental movements before, because these policies are so stupid, and the people are so united against them that I think all we need is really a focus.

And let me say, it's not for a selfish reason, just for our region. We are talking about the future of our country. And in the past we have seen areas like the South, after the Civil War, up until almost the First World War and beyond, being a depressed area. It's only in the last 20 years that they have moved ahead in States like Georgia and other industrial States are becoming industrial. And it's been good for the country as a whole.

And certainly if we let our economy and our natural resources go by the wire in Michigan and in the region it is just going to hurt the entire Nation into the next century. and the damage, as I said before, just can't be undone later on.

And so I thank you for all your help and for coming today.

Mr. **Blanchard**. Mary Anne Bach, who is the consultant with the minority, perhaps you have a question or two for the panel.

Ms. **Bach**. Yes.

Thank you, Mr. Blanchard.

I would like to direct my question to Mr. Rollar. Part of my question was answered by Mr. Jasperse. Thank you.

As a member of a national organization concerned with environmental affairs, I would like to know in a nationwide scope what your organization is doing to maintain consistent educational programs through the various eight States that are involved with the Great Lakes, in educating them on the state of the environmental quality of the Great Lakes region.

Mr. **Rollar**. Most of those activities are handled by an organization we have called the Midwest Regional Conservation Committee. The Sierra Club is a representative body and so at every level we have representatives from every chapter, which in the Great Lakes happens to correspond with every State, so that representatives from States meet on a quarterly basis in which they discuss the problems, identify priorities, propose strategies and solutions insofar as citizen groups are able to effectively influence action or to in some cases actually take action in the form of clean-up campaigns, service projects, and things of this nature.

So that information is decided on a regional basis and then disseminated back to the individual States and then even further to the grassroots levels, through organizations that are known as groups, which are often only several counties in size. And this is where the grassroots action takes place.

The Sierra Club is organized around outings programs and informational meetings, brochures are mailed on a routine basis to the members, and so it is encouraged, specifically, that members do get involved at the grassroots level, talk to their Representatives, Senators, Congressmen, at both the State and at the national level, so that it is a highly active, individually active organization, and I think we are doing a good job.

We also had a very specific Great Lakes Committee who focuses particularly on the Great Lakes and tries to track these issues, and as they develop, so that we are acting and not reacting all the time.

Ms. **Bach**. Thank you very much, Mr. Rollar.

Thank you, Mr. Blanchard.

Mr. BLANCHARD. Thank you.

One final question, relating to oil and gas drilling in the Great Lakes. What is the exact status of that proposal?

Mr. WASHINGTON. It passed the Senate and lays in the House Conservation Committee at this time.

There have been several amendments to that allowing for the exploration of natural gas and oil deposits, under the Great Lakes.

Mr. BLANCHARD. Is there drilling going on right now?

Mr. JASPERSE. No.

Mr. WASHINGTON. There is in the Canadian waters, or has been for many years. There are better than 1,000 wells that have been drilled in Canadian waters.

Mr. BLANCHARD. Gas or oil and gas?

Mr. WASHINGTON. Gas.

Mr. BLANCHARD. Do you view those as substantially different in their impact?

Mr. WASHINGTON. Yes, well, the dry gas is relatively safe and the drilling for it, known gas fields. But I think there is a genuine threat that expanded drilling could occur in some of the States. You will recall just a few years ago when they had this great natural gas shortage, and Ohio was very hard hit by that. They were threatening quite seriously to begin drilling in their part of Lake Erie.

Mr. BLANCHARD. Certainly if you drill for oil and if there were a problem, it could be a major catastrophe.

Mr. JASPERSE. In Michigan there is no drilling going on right now. In the portion of Lake Erie is where the dry gas is, but in the Michigan basin it's all wet gas.

Mr. BLANCHARD. OK.

Mr. WASHINGTON. Well there has been some drilling right up your way to it, Walpole Island, that far up, on the Canadian side; again looking for gas, primarily.

Mr. BLANCHARD. You mean down in southeastern Michigan?

Mr. JASPERSE. Ohio has a prohibition currently in terms of their State policy prohibiting from Marblehead Island over to Sandusky or to Point Pelee, any drilling west of that line, and those policies, both New York, Pennsylvania, and Ohio have just changed in recent years as a result of the 1977 problem with natural gas supplies.

Mr. BLANCHARD. So the Senate bill has passed prohibiting that? And it's in Committee in the House?

Mr. WASHINGTON. I think that it is going to pass. I don't see any problem with it passing. There is a great deal of sentiment for it, and State government, from the executive branch right on through as have all citizens organizations, have been unanimously opposed to any exploration development in the lakes. There may be some variations to that bill or some amendments allowing directional drilling, for instance, and perhaps even some exploration, but I don't believe that you are going to see for an awfully long time any actual holes punched in the Great Lakes.

Mr. BLANCHARD. What about the other States? Each may have their own policies, so you are talking about having some national standards here. You also have the problem of transportation, as you know, which may be more of a threat than actually punching a hole would be. When you start to haul the stuff around and a ship breaks up with oil in it, you've got an unbelievable problem in the lakes.

Mr. **Jasperse**. The policies of other States, both Minnesota and Wisconsin, do not have policies regarding the drilling of oil and gas in the Great Lakes.

Illinois has an administrative prohibition, similar to the Department of Natural Resources, Michigan's prohibition.

Indiana has a policy prohibiting it.

As I mentioned earlier New York, Pennsylvania and Ohio changed their prohibitions in 1978, 1979, and 1980, allowing for dry gas drilling only. They do not allow for the drilling of wet gas or of oil.

Though, again, those prohibitions were prohibiting oil and gas development in New York, Pennsylvania, and Ohio's Great Lakes waters and were lifted following the 1977 natural gas shortages.

Ohio does not allow, in terms of its law, the oil and gas drilling for whatever purposes, to occur west of a line from Point Pelee to Marblehead Island. That is the basin where you start to have the wet natural gas formations.

Mr. **Blanchard**. Well, this has been extremely helpful. I should indicate for the record that Congressman John Dingell had hoped to be here, to kick off the hearing this morning. However, Congressman Dingell wasn't, at the last minute, able to come. I do want to submit for the record his statement, so that will be a part of the record.

[The prepared statement of Congressman Dingell follows:]

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NATIONAL COMMISSION ON AIR QUALITY

MIGRATORY BIRD CONSERVATION COMMISSION

STATEMENT OF

THE HONORABLE JOHN D. DINGELL

BEFORE THE SUBCOMMITTEE ON

NATURAL RESOURCES, AGRICULTURE RESEARCH

AND ENVIRONMENT

COMMITTEE ON SCIENCE AND TECHNOLOGY
December 15, 1981

I wish to thank my Michigan colleague, Congressman James Blanchard, and the distinguished Chairman of the Subcommittee for inviting me to testify at this hearing on H. R. 3600 and the problems associated with the Great Lakes. I particularly want to commend my Michigan colleague for his considerable attention to the problems of the Great Lakes, especially in helping to ensure that Great Lakes research activities continue to be carried out by the Environmental Protection Agency.

The Great Lakes are an invaluable and irretrievable natural resource, particularly to those of us who represent or live in the Great Lakes Region. Of the 61.9 million acres of land in the State of Michigan, 24.7 million acres represent the surface area of the Great Lakes. The Lakes represent some 95 percent of the Nation's fresh water and approximately 20 percent of the world's fresh water supply. They serve as a major source of water supply for the Great Lakes Region for both industrial and nonindustrial uses and if water supplies grow smaller in the future, the Great Lakes could very well serve as a potential national water resource.

In the past 30 years the Great Lakes have undergone tremendous changes because of industrial, commercial and noncommercial pressures. Particular strains caused by water management, waste management, agriculture, flood control, water diversion, navigation and transportation, and especially water pollution have made the Great Lakes particularly vulnerable to degradation.

However, the Great Lakes continue to sustain manufacturing, mining, power supplies, transportation and agriculture as well as recreational activities such as hunting, fishing, swimming, power boating and sailing. The diversity of the Lakes is unmistakable, and the need to preserve this diversity is now critical.

The continued ability of the Great Lakes to sustain wildlife species and wildlife habitat is of particular concern to me. The United States' portion of the Great Lakes area contains75 million acres of wildlife habitat. Shore waters total 550,000 acres of which 432,000 acres are critical to wildlife. In fact, all open waters of the Great Lakes are utilized by migratory waterfowl.

Until about 1950, 11 species of fish contributed significantly to Great Lakes fishing: Lake Trout, Lake Sturgeon, Lake Herring, Pike Chubs, and Whitefish Chubs only to name a few. Unfortunately, the invasion of parasitic fish species, overfishing and water pollution have eliminated many commercial and sport species. Some fish species have been reduced to subnormal population levels.

Where there has been much progress in cleaning up the Great Lakes and in mitigating some of the tremendous pressures exerted on this research, we have yet to complete the job. An entire region depends on the integrity of the Great Lakes and it is a major resource that should not and cannot be put on the back burner.

This is why I believe that the Great Lakes should be formally recognized as a national and international natural resource. Not only the Great Lakes region, but the Nation as a whole should undertake efforts to ensure that the Great Lakes are protected for our future generations, not just our immediate use. Congressman Blanchard's efforts to address this responsibility in his legislation, H. R. 3600, is a major first step in this process. The legislation addresses the need for increasing the level of coordination between and among the Federal agencies and State agencies concerned with maintenance of the Great Lakes. This has been a problem in the past.

I believe that H. R. 3600 presents a general framework through which we might begin to address the problems of the Great Lakes. I am also confident that Congressman Blanchard and the Subcommittee will use the foundation of this legislation to frame a workable mechanism with which we can more adequately ensure the future integrity of the Great Lakes.

Mr. **Blanchard.** I should also indicate that we will keep the record open here for questions to be submitted to you in writing. We would hope that you would be able to answer such questions as you receive them.

And let me simply conclude by indicating, as I mentioned earlier, this subcommittee in a bipartisan fashion has shown great interest in our lakes, the Great Lakes, and without the subcommittee's help we would not have been able to keep at some minimum level, the Grosse Ile facility open. However modest, Grosse Ile's program now is due to administration budget cuts. It is stated to be the only Federal facility looking at the effect of toxics in the lakes and upon human health, which is, I think we can all agree, a very critical subject.

And so I think that we can make certain adjustments to improve H.R. 3600. But if we do so in a reasonable fashion, we can probably pass the bill, at least out of the subcommittee, and probably the full committee. It would seem to me that this endeavor is worthy of our best efforts and I know, speaking in behalf of myself, I have about a year to get that one done. So, hopefully, we will get it done. That's my intention.

And your help in supporting that effort, and the time you have taken to come here is deeply appreciated by all of us. So, on behalf of Chairman Scheuer and the rest of the members of our subcommittee, thank you for being with us.

The subcommittee stands adjourned until further call of the Chair.

[Whereupon, at 1 p.m., the subcommittee was adjourned.]

GREAT LAKES PROTECTION ACT OF 1981

TUESDAY, MARCH 9, 1982

House of Representatives, Committee on Science and Technology, Subcommittee on Natural Resources, Agriculture Research and Environment,
Washington, D.C.

The subcommittee met at 2:10 p.m., pursuant to call, in room 2325, Rayburn House Office Building, Hon. James H. Scheuer (chairman of the subcommittee) presiding.

Mr. **Scheuer**. The subcommittee will come to order.

Today the Subcommittee on Natural Resources, Agriculture Research and Environment will continue its consideration of H.R. 3600, the Great Lakes Protection Act of 1981.

Clearly, it is a matter of national consensus that protecting the environmental quality of the Great Lakes must be a national priority. As a result of the ongoing and really tremendous efforts of our colleague from Michigan, Congressman Jim Blanchard, this act will for the first time make it a matter of national congressional priority, with our imprimatur on it, that the protection of the Great Lakes continues to be a matter of national concern and with an urgent claim on protection by the Federal Government.

I congratulate my colleague for his outstanding leadership in crafting this major piece of legislation.

Mr. Blanchard's bill is aimed at the proper management and control of our scarce resources in and around the Great Lakes region both in terms of environmental controls and the budget dollars necessary to accomplish this job.

I have spent the last 5 days in consultation with Canadian parliamentarians discussing various problems that have cropped up in our relations. They are deeply concerned about acid rain, for example. They are deeply concerned about the quality of the Great Lakes, and they have serious reservations about the depth and strength of our commitment to fulfill our obligations under the Great Lakes Water Quality Agreement of 1978.

Before we hear from our distinguished witness, I am going to call on our colleague Congressman Blanchard, who is the architect of this legislation, for any remarks he cares to make.

[Mr. Scheuer's opening statement follows:]

HON. JAMES H. SCHEUER
OPENING STATEMENT
GREAT LAKES PROTECTION ACT
MARCH 9, 1982

The Subcommittee will come to order.

Today, the Subcommittee on Natural Resources, Agriculture Research and Environment will continue its consideration of H.R. 3600, the Great Lakes Protection Act of 1981.

Clearly, protecting the environmental quality of the Great Lakes must be a national priority.

AS A RESULT OF THE TIRELESS
EFFORTS OF OUR
DISTINGUISHED COLLEAGUE
FROM MICHIGAN, MR. BLANCHARD,
THIS ACT WOULD FOR THE FIRST
TIME MAKE THE PROTECTION OF
THE GREAT LAKES THE CONTINUING
POLICY OF THE FEDERAL GOVERNMENT.

I CONGRATULATE MY COLLEAGUE
FOR CRAFTING THIS BENCHMARK
PIECE OF LEGISLATION AND
FOR HIS LEADERSHIP IN THE
PRESERVATION AND PROTECTION
OF THE GREAT LAKES.

MR. BLANCHARD'S BILL IS AIMED
AT THE PROPER MANAGEMENT AND
CONTROL OF OUR SCARCE RESOURCES
BOTH IN TERMS OF THE ENVIRONMENT
AND THE BUDGET DOLLARS NECESSARY
TO ACCOMPLISH THIS TASK.

IN THESE TIMES OF INCREASING
DEFICITS, THIS IS NOW

MORE IMPORTANT THAN EVER.

THE PRESENT BUDGET LEVELS HAVE ALREADY PLACED SEVERE STRAINS ON ADDRESSING PROBLEMS INVOLVING GREAT LAKES WATER QUALITY.

I SPENT LAST WEEK WITH A CANADIAN-U.S. INTERPARLIAMENTARY WORKING GROUP AND I CAN ATTEST THAT OUR CANADIAN NEIGHBORS HAVE SERIOUS DOUBTS ON OUR SINCERITY TO FULFILL OUR COMMITMENTS UNDER THE GREAT LAKES WATER QUALITY AGREEMENT OF 1978.

BEFORE WE HEAR FROM OUR DISTINGUISHED WITNESSES, I WOULD LIKE TO TURN TO THE RANKING MINORITY MEMBER OF THE SUBCOMMITTEE, BILL CARNEY, FOR ANY REMARKS HE MAY WISH TO MAKE.

Mr. **Blanchard**. Mr. Chairman, I appreciate the opportunity to continue these hearings. As you know, we had hearings several months ago on H.R. 3600 and I appreciate the continued support of most of the members of our subcommittee, including Representative Schneider who is here, and also the ranking minority member, Representative Carney.

We are very concerned not only about the future of the water quality in the Great Lakes, but current attempts to slash the budget. I think we have developed fully for the record in earlier hearings the importance of the lakes, the fact that they comprise 95 percent of our surface fresh water, the fact that one-tenth of our country drinks water from the lakes, and other important uses—commercial, industrial, and tourist—but since our hearings began last fall, further attempts to slash Great Lakes research funding have occurred in the President's fiscal year 1983 budget. We are very distressed about that and we will be proceeding to try to restore funding for Great Lakes research within EPA and NOAA during the course of the work of our subcommittee.

Today our major thrust, of course, is to continue consideration of H.R. 3600. We have a number of distinguished witnesses, including our esteemed and distinguished former colleague who is now head of the International Joint Commission, Mr. McEwen.

I should also note, as you did, Mr. Chairman, that Great Lakes water quality not only affects the health and prosperity of our own country and, of course, the State that I represent, but also our relations with the nation of Canada. The Canadian government is very concerned about whether we are going to be able to live up to our water quality agreement with them.

Finally, let me say that I think H.R. 3600 is an important step in the right direction. This legislation will improve coordination of the research and monitoring of Great Lakes water quality. Importantly, H.R. 3600 makes the protection of the Great Lakes a national priority.

It is our belief, and we can document it, that however well meaning, and they have been, and however dedicated, and they have been, are the people at NOAA, the fact is under the National Ocean Pollution Planning Act as presently written NOAA officials are legally and physically unable to give the Great Lakes the special attention the Lakes deserve. There is, therefore, a clear need for H.R. 3600.

Because of earlier comments and meetings and consultations, we have already decided to slightly modify H.R. 3600. There will be an amendment in the nature of a substitute presented to the subcommittee when we markup the legislation.

We look forward to the testimony. Let me simply insert my full statement into the record and again let me thank you, Mr. Chairman, and also Ranking Minority Member Carney, Representative Schneider, and my other colleagues on the subcommittee for allowing us to fully hear this subject and have these hearings.

Thank you.

[Mr. Blanchard's prepared statement follows:]

STATEMENT BY

CONGRESSMAN JAMES J. BLANCHARD

Mr. Chairman, let me take this opportunity to indicate my deep appreciation to you for scheduling this second day of hearings on H.R. 3600, The Great Lakes Protection Act.

H.R. 3600 would reauthorize the National Ocean Pollution Planning Act for two additional years as well as add new language to improve the federal government's efforts to preserve and protect the Great Lakes. The bill presently enjoys 30 cosponsors, representing both parties and most of the regions of the country. Among the cosponsors are both the Chairman and the ranking minority member of this subcommittee.

Since H.R. 3600 was introduced last May, two days of hearings have been already held: the hearing conducted by this subcommittee in December, and a hearing conducted by the Oceanography Subcommittee on the House Merchant Marine Committee in February of this year. In addition, I have had conversations about this legislation with countless leading environmentalists, business leaders, scientists, and others who understand the need to improve our efforts to preserve the Great Lakes. Support for H.R. 3600 has been strong and outspoken.

We must not lose sight of the national and international importance of the Great Lakes, in addition to its critical importance to the people, communities, and states in the Great Lakes region. Nor must we lose sight of the fact that the federal government's past and present efforts have been woefully insufficient.

As we know, over 20 federal agencies and federally-financed facilities have been involved in Great Lakes-related matters. There has been inadequate coordination of their work, and the coordination that has existed has been on an ad hoc, impromptu basis. During my tenure as a Member of this Subcommittee, I have seen agencies come before us with little or no understanding of the Great Lakes-related work performed by sister agencies, or by the various states. The Great Lakes-comprising 95% of the nation's fresh water supply, and the source of drinking water for one-tenth of the country's population, is far too important for us to allow the present sorry situation to continue.

Furthermore, the Reagan Administration's attack on the Great Lakes must not go unanswered. Among other things, the President's FY83 budget proposed the elimination of the Sea Grant Program, the Environmental Protection Agency's Large Lakes Research Station at Grosse Ile, Michigan, and NOAA's Great Lakes Environmental Research Laboratory at Ann Arbor. The loss of federal funds as a result of the cuts at the Grosse Ile and Ann Arbor facilities alone would, if we did nothing about it, exceed $6 million. There is, quite simply, no justification for such cuts.

We all should be aware of the Canadian Government's deep concern over the federal government's lack of attention and lack of focus to the serious environmental problems confronting the Great Lakes. We have been advised by the Canadian Government as recently as last week of their concerns, and I would like written material documenting that to be inserted in the hearing record after the printing of my own opening statement.

Let us be clear about one point: it will be virtually impossible for the United States to live up to the 1978 Great Lakes Water Quality Agreement it has reached with Canada unless two things happen:

1) Congress provides adequate funds for environmental protection of the Great Lakes, and particularly for the important research funded and performed through the Sea Grant Program, the EPA Large Lakes Research Station, and NOAA's Great Lakes Environmental Research Laboratory; and

2) We enact legislation to improve the federal government's understanding of the environmental problems in the Great Lakes, and better coordinates the federal effort to understand and solve those problems.

With regard to our first responsibility, I plan, as do others on both this Subcommittee and throughout the Congress, to work to maintain funding for Great Lakes research efforts. With regard to our second responsibility, H.R. 3600 is a modest but important step in the direction of better understanding and better coordination.

It is my understanding that this afternoon, the Administration will appear before us, supporting reauthorization of the National Ocean Pollution Planning Act, and supporting efforts to preserve the

Great Lakes, but further arguing that H.R. 3600 is not needed. Let me respectfully but strongly disagree. Neither the National Ocean Pollution Planning Act--nor any other federal statute as presently written and presently administered--provides the focus on Great Lakes concerns that H.R. 3600 provides. All too often we have been told, both in formal hearings and in more informal settings, that the Great Lakes falls between the federal government's cracks--not regarded as part of the oceans by officials and scientists concerned with the oceans, and not regarded as within the purview of the officials and scientists interested in America's inland waterways.

Dedicated as the officials at NOAA are to the National Ocean Pollution Planning Act, they are both physically and legally unable to give the Great Lakes the special attention they deserve.

As a result of the hearings already conducted by both this Subcommittee and the Oceanography Subcommittee of the Merchant Marine Committee--which shares jurisdiction over H.R. 3600--and as a result of informal meetings I have had, an amendment in the nature of a substitute to H.R. 3600 has been fashioned. I plan to offer my substitute--which makes mostly technical changes in the bill--when we mark-up this legislation. Obviously, the hearing today will be an important one in helping this subcommittee work its will on the legislation, including any substitute I may introduce.

In closing let me reiterate my deep appreciation to Chairman Scheuer, to Ranking Minority Member Carney, and to my other colleagues on this subcommittee who have joined me in sponsoring this important legislation.

Mr. **Scheuer**. Thank you, Congressman. Thank you for appearing here today and thank you for your great leadership on this cause.

Our currently ranking minority member present at this hearing is the distinguished and very hard-working Claudine Schneider of the State of Rhode Island.

Mrs. **Schneider**. Thank you, Mr. Chairman.

I would only add that as a cosponsor of this legislation, I certainly recognize the importance that the Great Lakes provides for the entire United States, whether it be in terms of its providing a source of food or employment, transportation or recreation for millions of Americans.

The fact that it also comprises about 95 percent of our total drinking water, surface fresh water, I think, is significant. I believe that my other colleagues on this subcommittee join me in support of continuing attention to preserving and conserving the Great Lakes area.

Thank you very much, Mr. Chairman.

Congressman Carney has asked that I submit his statement for the record at this time.

Mr. **Scheuer**. We will be happy to place Mr. Carney's statement at this point.

[Mr. Carney's statement follows:]

Opening Statement of Congressman William Carney
Ranking Minority Member
Subcommittee on Natural Resources, Agricultural
Research and Environment
March 9, 1982

Thank you, Mr. Chairman. I wish to make my comments brief today as there are several witnesses which we will be hearing from. I thank them all for coming before the Subcommittee on Natural resources, Agricultural Research and Environment; I look forward to the contributions they will be making.

I commend my colleague, Congressman Blanchard, for his continued dedication in protecting and enhancing the natural resources and economic vitality of the Great Lakes Region. H. R. 3600, "Great Lakes Protection Act of 1981", introduced by Mr. Blanchard and for which I am a cosponsor, would recognize the importance of the Great Lakes as a national resource by making their protection a continuing policy of the Federal Government.

The Members of this Subcommittee are concerned about the protection of our most valuable resource-WATER- and have addressed this concern repeatedly through hearings and various legislative activities. In my own district and that of all of Long Island, there is a growing awareness of the need to preserve and enhance our Sole Source Aquifer System, the only source of potable water available to our residences. Eight other states, likewise, have Sole Source Aquifer Systems and their concern for this priceless resource is mounting.

In closing Mr. Chairman, I would like to say that this subcommittee recognizes the importance of the Great Lakes, an area bordering eigh states, providing sources of food, employment, transportation, and recreation for millions of Americans, and comprising 95 per cent of the surface freshwater of the United States. It is necessary that we address the need for preserving and conserving this and all other natural areas in our great nation.

Mr. SCHEUER. Thank you, Mrs. Schneider.

Now, for our first witness, the Hon. Robert McEwen, who is chairman of the U.S. Section of the International Joint Commission. Please take your place, Congressman.

STATEMENT OF ROBERT C. McEWEN, CHAIRMAN, UNITED STATES SECTION, INTERNATIONAL JOINT COMMISSION, ACCOMPANIED BY E. RICHMOND OLSON, CHAIRMAN, CANADIAN SECTION, AND CHARLES BEDARD, COMMISSIONER, CANADIAN SECTION

Mr. McEWEN. Mr. Chairman, if I might, I am accompanied today by two other members of our Commission, E. Richmond Olson and Charles Bedard, and I wonder if they might join me at the table.

Mr. SCHEUER. By all means bring them up and introduce them. We would be delighted to have them. Would you introduce them for the record?

Mr. McEWEN. Yes, Mr. Chairman.

On my right, E. Richmond Olson, who is Chairman of the Canadian Section, and Charles Bedard, who is also a commissioner from Canada.

I said Chairman of the Canadian Section. As you know, we are a binational commission, one commission composed of members from both countries. We function in sections in Washington and Ottawa for administrative convenience, but we are one commission and what I would like to submit to the committee today is something we have, as a unitary body, gone over and felt was appropriate for us to submit to this committee.

Mr. SCHEUER. Very good.

I would tell your two colleagues that I just left their working group of about 15 members of the Canadian Parliament and a comparable number of Senators and Congressmen on the problems that inevitably crop up from time to time to divide our two countries. Your Parliamentarians are an exceptionally talented and fine group and we all came away convinced that although there are some problems that divide us, there are far more elements that unite us in bonds of steel.

This is the third or fourth time that we have met with our Canadian counterparts and we have come away very, very much impressed with their quality, integrity, and devotion to the best interests of their country and the best interests of the North American Continent.

It is a great pleasure, Bob, to have you back.

Congressman McEwen came to Congress when I came to Congress in 1964 and we have been close friends and colleagues every since. I think there was no member of the New York Delegation for whom his colleagues had more affection and respect for his diligence, his concern, the fine degree of collegiality with which he related to his members and his colleagues than Congressman McEwen.

So it is a great pleasure to have you here, Bob, and we will now yield you such time as you may require. Of course, your statement will be printed in full in the record. As each of you start to speak, your full printed statements will be reproduced in the record, so if you care to chat with us informally and hit the high spots, we would be happy to have you do that.

Mr. McEWEN. Thank you, Jim.

Let me say again, having introduced my colleagues, it is a great personal privilege and honor to have them accompany me here today, and so far as I know—and I make this statement with the former distinguished chairman of the U.S. Section of this Commission, Bob Sugarman, present, and also, I might say, Mr. David LaRoche, the Secretary of the U.S. Section—I think, but maybe one of them with longer experience might contradict it, this is the first time that this Commission has presented testimony on a legislative proposal.

We do have to come up, Congressman Blanchard, on appropriations, but on a legislative proposal before a committee of either the Congress or the Parliament, we did prepare, as a Commission, and if I may—it is not terribly long, Mr. Chairman—read this statement I think it will give you some framework of what our thinking is.

I would like to provide some background as to our involvement in the Great Lakes and then discuss the international implications of domestic legislation which addresses our boundary waters, of which the Great Lakes are part. As you will see, legislation such as that before us today often has more far-reaching effects than those contemplated on the face of the bill. The provisions may augment, or on the other hand, may inhibit the United States in meeting its obligations under existing international agreements.

In 1909, the United States and Great Britain, on behalf of Canada, which was then not fully self-governing, negotiated a Boundary Waters Treaty to facilitate the use of the waters flowing across the common boundary. The Treaty was designed to prevent disputes between the two countries over the use of boundary waters, and on other questions which might arise between the United States and Canada.

To assist the two governments in the implementation of the Treaty's provisions, an independent organization known as the International Joint Commission was formed. The Commission is a binational, unitary body comprised of equal membership from each country which oversees and approves the use of our shared freshwater resources.

The establishment of the Commission has enabled the two sovereign powers to utilize the boundary waters to mutual advantage, in an efficient manner, and without the case-by-case negotiation demanded of all other such types of resource use. Since its inception 70 years ago, the Commission has acted on a variety of boundary water matters providing peaceful and timely solutions and recommendations when views differ. As a result, the purpose of the Treaty, we believe, has been achieved.

The Commission serves in a dual capacity. As a quasi-judicial body, it has jurisdiction over matters affecting the levels and flows of boundary waters. The Commission also acts as an advisory body, investigating and making recommendations on matters referred to it by the two governments relating to those waters. In recent years, an increasing amount of the Commission's work has focused on the Great Lakes.

Although the Commission may recommend that governments adopt programs to achieve certain objectives, the Commission has traditionally refrained from commenting on the substance of proposed legislation, as we deem that to be an internal matter of the individual Federal governments. We believe, however, that our experience as part of a cooperative international effort to achieve shared objectives in the Great Lakes basin may assist this subcommittee when considering legislation which will have an impact upon our northern neighbor.

The Commission has been vitally interested in the Great Lakes since 1912 when it received a reference from governments to study the problem of pollution in waters along the boundary, including the Great Lakes. The past decade has seen increased Commission attention to Great Lakes water quality issues. Our increased activity has been due primarily to the decision of the United States and Canadian Governments to enter into two Agreements on Great Lakes Water Quality.

In 1970, the Commission had issued a report on pollution of the Lower Lakes. The Commission found that the waters of the Lower Lakes were being polluted on both sides of the boundary, and I quote from that report, ". . . to an extent which is causing injury to health and property on the other side of the boundary," referring to Article IV of the Boundary Waters Treaty.

The Commission identified water quality objectives which, if met, would enable both countries to fulfill their mutual obligations under the Treaty. The Commission recommended that these objectives be formally adopted by the two countries and that Canada and the United States enter into agreement on programs and measures to be taken in order to achieve them.

It was also recommended that the two countries develop compatible and coordinated programs, in concert with Provincial and State governments, to control pollution of the lakes from phosphorous, pesticides, toxic and hazardous materials, and other pollutants. Pursuant to this report, President Nixon and Prime Minister Trudeau signed a Great Lakes Water Quality Agreement in 1972 on behalf of their two countries.

The 1972 agreement set forth general and specific objectives for water quality, and outlined programs and measures which the countries agreed to establish as part of the joint cleanup effort.

In 1978, during the Carter administration, the two countries reaffirmed their commitment to restore and enhance the water quality of the lakes by entering into a second, more comprehensive agreement. As you can see, Mr. Chairman, the Great Lakes issue transcends partisan politics. Administrations, both Republican and Democratic, have embraced the need for cooperation between the United States and Canada spelled out in the two water quality agreements. It was in this spirit that President Reagan, during his trip to Ottawa in March 1981, pledged his continued support of the 1978 agreement, in his words, "* * * to protect our joint heritage in the Great Lakes."

Under both agreements, the IJC has been charged with several responsibilities aimed at assisting in the implementation of the provisions set forth in the agreements. The 1972 agreement established a framework for international cooperation in the Great

Lakes pollution control effort. The 1978 agreement recognized a far more complex set of issues by inquiring into the effect of toxic contaminants on the waters, on fish, and ultimately on the people of the Great Lakes basin.

The 1978 agreement expanded the earlier framework by adopting an ecosystem concept, placed new emphasis on the control of pollution of the lakes from toxic substances, and stated the commitment of the parties to develop a coordinated surveillance program.

The Commission was charged with the responsibility of monitoring the Governments' efforts to achieve the goals of the agreement, and to assist in the implementation of programs where appropriate. Unfortunately, much of the information we need to make decisions is simply not available. Research, closely coordinated between the two Federal Governments, and among the various jurisdictions, must be a keystone for effective implementation of this framework.

An enormous amount of research still needs to be conducted, and the commitment to this need must continue if we are to receive the data essential to making the intelligent judgments that over 30 million people in the Great Lakes basin, citizens of the United States and Canada, deserve and indeed insist upon. The measure before us today, or any other measure which has as its goal the effective coordination of Great Lakes research, constitutes for this Commission an essential ingredient to discharging our obligations under the 1978 Water Quality Agreement.

It is to this end, in fact, that the Commission has directed its science advisory board to conduct a survey, review, and assessment of existing research programs, and to advise the Commission on research needs and areas where international coordination and cooperation are required.

As a signatory to the 1978 agreement, the United States has made a commitment to develop and implement programs to achieve the purpose and objectives of the agreement, and as I mentioned earlier, President Reagan has reinfored that commitment.

This commitment includes, among other measures, the development of coordinated planning processes and best management practices to insure adequate control of all sources of pollutants. The United States has made a commitment to coordinate air, water, and solid waste programs to assess the total input of toxic substances to the Great Lakes ecosystem. The United States agreed to prepare an inventory of all municipal and industrial point sources discharging into the Great Lakes system as a preliminary step toward assessing the eventual abatement of polluting discharges, and the United States has pledged to intensify its research efforts to determine the effects of toxic and other substances on human health, fishery resources, and wildlife of the Great Lakes basin ecosystem.

Coordination of programs is essential to all these efforts.

There is no question that the Great Lakes are a unique national and international natural resource. The lakes contain 90 percent of all the surface fresh water in North America. The basin is not only home for over 30 million people, it is also the heart of North American industry, as well as a superb recreational resource for citizens of both countries.

This already invaluable fresh water resource is becoming ever more valuable to the United States and Canada as other sources of surface and ground water are depleted. The continued peaceful shared use and coordinated concern over the future of these waters serve as a model of international cooperation for the rest of the world to follow.

The eight States bordering the Great Lakes are intimately involved in this effort and, therefore, play a unique role in the foreign policy of this country. Unlike any other region in the United States, the Great Lakes States border one of the great natural wonders of this world, and in our opinion, Mr. Chairman, all governments must recognize that necessary resources previously committed to restore and protect this shared international resource must continue to be made available.

Mr. Chairman, the Great Lakes system does not exist as a group of isolated lakes. The slow-paced but determined flow of the upper to the lower lakes means that the actions of one will some day impact on his neighbor, and upon his neighbor, and so on through the system. Our countries must understand that contamination does not recognize international boundaries. We must honor our obligations under the Boundary Waters Treaty of 1909 and the 1978 Great Lakes Water Quality Agreement. And we must preserve for future generations of Americans and Canadians what is truly a magnificent natural resource.

Thank you very much.

[Mr. McEwen's prepared statement follows:]

INTERNATIONAL JOINT COMMISSION
UNITED STATES AND CANADA
WASHINGTON, D.C. 20440

TESTIMONY PRESENTED TO THE HOUSE SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH, AND ENVIRONMENT.

Robert C. McEwen, Chairman .
United States Section, International Joint Commission
March 9, 1982

(Introduction to be verbal.)

I would like to provide some background as to our involvement with the Great Lakes, and then discuss the international implications of domestic legislation which addresses our boundary waters, of which the Great Lakes are part. As you will see, legislation such as that before us today often has more far-reaching effects than those contemplated on the face of the bill. The provisions may augment, or on the other hand, may inhibit, the United States in meeting its obligations under existing international agreements.

In 1909, the United States and Great Britain, on behalf of Canada, which was then not fully self-governing, negotiated a Boundary Waters Treaty to facilitate the use of the waters flowing across the common boundary. The Treaty was designed to prevent disputes between the two countries over the use of boundary waters, and on other questions which might arise between the United States and Canada. To assist the two governments in the implementation of the Treaty's provisions, an independent organization known as the International Joint Commission was formed. The Commission is a binational, unitary body comprised of equal membership from each country which oversees and approves the use of our shared fresh water resources. The establishment of the Commission has enabled the two sovereign powers to utilize the boundary waters to mutual advantage, in an efficient manner, and without the case by case negotiation demanded of all other such types of resource use. Since its inception 70 years ago, the Commission has acted on a variety of boundary water matters, providing peaceful and timely solutions and recommendations when views differ. As a result, the purpose of the Treaty has been achieved.

The Commission serves in a dual capacity. As a quasi-judicial body it has jurisdiction over matters affecting the levels and flows of boundary waters. The Commision also acts as an advisory body, investigating and making recommendations on matters referred to it by the two Governments relating to those waters. In recent years, an increasing amount of the Commission's work has focused on the Great Lakes.

Although the Commission may recommend that Governments adopt programs to achieve certain objectives, the Commission has traditionally refrained from commenting on the substance of proposed legislation, as we deem that to be an internal matter of the individual federal governments. We believe, however, that our experience as part of a cooperative international effort to achieve shared objectives in the Great Lakes Basin may assist this Subcommittee when considering legislation which will have an impact upon our northern neighbor.

The Commission has been vitally interested in the Great Lakes since 1912 when it received a reference from Governments to study the problem of pollution in the connecting channels of the Lakes. The past decade has seen increased Commission attention to Great Lakes water quality issues. Our increased activity has been due primarily to the decision of the United States and Canadian governments to enter into two Agreements on Great Lakes Water Quality.

In 1970, the Commission had issued a Report on pollution of the lower lakes. The Commission found that the waters of the Lower Lakes were being polluted on both sides of the boundary, "...to an extent which is causing injury to health and property on the other side of the boundary," referring to Article IV of the Boundary Waters Treaty. The Commission identified water quality objectives which, if met, would enable both countries to fulfill their mutual obligations under the Treaty. The Commission recommended that these objectives be formally adopted by the two countries and that Canada and the United States enter into agreement on programs and measures to be taken in order to achieve them. It was also recommended that the two countries develop compatible and coordinated programs, in concert with provincial and state governments, to control pollution of the Lakes from phosphorous, pesticides, toxic and hazardous materials, and other pollutants.[1] Pursuant to this Report, President Nixon and Prime Minister Trudeau signed a Great Lakes Water Quality Agreement in 1972 on behalf of their two countries. The 1972 Agreement set forth general and specific objectives for water quality, and outlined programs and measures which the countries agreed to establish as part of the joint cleanup effort. In 1978, during the Carter Administration, the two countries reaffirmed their commitment to restore and enhance the water quality of the Lakes by entering into a second, more comprehensive agreement. As you can see, Mr. Chairman, the Great Lakes issue transcends partisan politics. Administrations, both Republican and Democratic, have embraced the need for cooperation between the United States and Canada spelled out in the two Water Quality Agreements. It was in this spirit that President Reagan, during his trip to Ottawa in March, 1981, pledged his continued support of the 1978 Agreement, "...to protect our joint heritage in the Great Lakes."

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[1] 1970 Report of the International Joint Commission on Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River)

Under both Agreements, the IJC has been charged with several responsibilities aimed at assisting in the implementation of the provisions set forth in the Agreements. The 1972 Agreement established a framework for international cooperation in the Great Lakes pollution control effort. The 1978 Agreement recognized a far more complex set of issues by inquiring into the effect of toxic contaminants on the waters, on fish, and ultimately, on the people of the Great Lakes Basin. The 1978 Agreement expanded the earlier framework by adopting an ecosystem concept, placed new emphasis on the control of pollution of the Lakes from toxic substances, and stated the commitment of the parties to develop a coordinated surveillance program. The Commission was charged with the responsibility of monitoring the Governments' efforts to achieve the goals of the Agreement, and to assist in the implementation of programs where appropriate. Unfortunately, much of the information we need to make decisions is simply not available. Research, closely coordinated between the two federal governments and among the various jurisdictions, must be a keystone for effective implementation of this framework.

An enormous amount of research still needs to be conducted, and the commitment to this need must continue if we are to receive the data essential to making the intelligent judgments that over 30 million people in the Great Lakes Basin, citizens of the United States and Canada, deserve and indeed insist upon. The measure before us today, or any other measure which has as its goal the effective coordination of Great Lakes Research, constitutes for this Commission an essential ingredient to discharging our obligations under the 1978 Water Quality Agreement. It is to this end, in fact, that the Commission has directed its Science Advisory Board to conduct a survey and review and assess existing research programs, to advise the Commission on the need for international coordination and cooperation.

As a signatory to the 1978 Agreement the United States has made a commitment to develop and implement programs to achieve the purpose and objectives of the Agreement, and, as I mentioned earlier, President Reagan has reinforced that commitment. This commitment includes, among other measures, the development of coordinated planning processes and best management practices to ensure adequate control of all sources of pollutants. (Article II.) The United States has made a commitment to coordinate air, water, and solid waste programs to assess the total imput of toxic substances to the Great Lakes ecosystem. (Annex 12.) The United States agreed to prepare an inventory of all municipal and industrial point sources discharging into the Great Lakes system as a preliminary step toward assessing the eventual abatement of polluting discharges. (Article VI(1)(c).) And the United States has pledged to intensify its research efforts to determine the effects of toxic and other substances on human health, fishery resources and wildlife of the Great Lakes Basin Ecosystem. (Annex 12.) Coordination of programs is essential to these efforts.

There is no question that the Great Lakes are a unique national and international natural resource. The Lakes contain 90% of surface fresh water supplies for North America. The Basin is not only home for over 30 million people, it is also the heart of North American industry, as well as a superb recreational resource for citizens of both countries. This already invaluable fresh water resource is becoming ever more valuable to the United States and Canada as other sources of surface and ground water are depleted. The continued peaceful shared use and coordinated concern over the future of these waters serve as a model of international cooperation for the rest of the world to follow. In this respect, the eight states bordering the Great Lakes play a unique role in the foreign policy of this country. Unlike any other region in the United States, the Great Lakes states border one of the great natural wonders of this world, and in our opinion, Mr. Chairman, Governments must recognize that necessary resources previously committed to restore and protect this shared international resource must continue to be made available.

Mr. Chairman, the Great Lakes System does not exist as a group of isolated lakes. The slow-paced but determined flow of the Upper to the Lower Lakes means that the actions of one will someday impact on its neighbor, and upon its neighbor, and so on through the system. Our countries must understand that contamination does not recognize international borders. We must honor our obligations under the Boundary Watwrs Treaty of 1909 and the 1978 Great Lakes Water Quality Agreement. And we must preserve for future generations of Americans and Canadians what is truly a magnificent natural resource.

(Conclusion will be verbal.)

Mr. SCHEUER. Thank you very much, Congressman.

At this time, with Congressman Blanchard's consent, Jim, I would like to turn the chair over to you. You are the author of this legislation and the expert on it, and I would hope that you would be willing to ask the questions and recognize your colleagues.

May I yield the chair to you?

Mr. BLANCHARD [presiding]. Thank you, Mr. Chairman.

Chairman McEwen, is it fair to assume that you, as Chairman of the U.S. section of the International Joint Commission, are deeply concerned about President Reagan's proposed cuts in Great Lakes research funds?

Mr. MCEWEN. I think, Mr. Chairman, I can speak for all of us on the commission. We are concerned, and further, we are concerned about our own apparent inability to identify just what the impacts are, and that is why, in this statement that we have presented to you here today, we mention the lack of information on just what are the programs, who is conducting them, and are we duplicating in Wisconsin or Pennsylvania, or is some program in the United States duplicating a Canadian program? Are two people trying to reinvent the wheel at the same time, if you will?

We lack the hard information on just what these programs are, and that is why, as I mention in here, we have directed our science advisory board, as one of their tasks this year, to make an inventory of what is the research that is being done.

Mr. BLANCHARD. We know there are over 20 agencies or federally financed facilities that are doing Great Lakes research and one of the purposes of the bill is to improve the coordination of this research.

President Reagan wants to close down two key labs. I think we can probably restore them, but the President's cuts have to be of utmost concern, especially when you look into the problems affecting the Great Lakes—such as toxics, which you highlighted in your testimony.

Let's assume we are going to mark this bill up and pass it. What suggestions or cautions would you have to us before we do that?

Mr. MCEWEN. I think, Mr. Chairman, here we are getting into an area that—and I don't like to roll off your question—but I don't think it is appropriate, and we discussed this as a Commission, to make direct, specific comments on legislation either before the Congress or the Parliament, but simply what we see to be our overview of the lakes and the problems we face, some of which we mentioned in here that you have already identified and are endeavoring to address in your legislation.

But as to the specifics of legislation, we submit, Mr. Chairman, that is for legislators to determine. Having served with you and Jim, and Mrs. Schneider—I didn't have the pleasure of serving with you, but I am delighted to see you here in the Congress—I think we have all experienced that even where we were very much involved in passing legislation, sometimes it didn't, in practice, when it got through to a bureaucracy, turn out the way we anticipated. So from the experience adding to the position of this binational Commission, we are reluctant to get into specific recommendations for legislation but are happy to address specific needs, as we believe we have, on the need for coordination, for instance, of research.

Mr. **Blanchard**. You mentioned the need and the intention of the United States to intensify its research efforts to determine the effects of toxics and other substances on human health. Where are you getting your research now on that subject?

Mr. **McEwen**. Well, it comes from a good many sources in both countries. The International Joint Commission relies heavily and works with its water quality board and science advisory board on the Great Lakes. Those two boards are composed of people of many specialties, and the science advisory board particularly, in areas such as toxicology and epidemiology, and so forth.

They furnish their reports to us, annual reports, and more frequently from time to time if there are matters of greater urgency than waiting on an annual report, and it is largely on the basis of that that we make our reports to government.

An illustration, Mr. Chairman, and I say to Congressman Scheuer that this involved our State of New York. This Commission during the tenure of our distinguished former Chairman, Mr. Sugarman, who is here with me today, reported on the Niagara, you might be interested to know, much earlier than you were reading more recently in the paper about certain actions being taken. This Commission made a report to governments on the serious condition on the Niagara some 10 or 11 months before visible action started to be taken to correct the deficiencies in the municipal plant in Niagara Falls, and other actions that were taken.

So, there are times when the Commission has, and I cite this as an example, acted between annual reports to government. If there was something of urgency and that was considered by the Commission, that would be an urgent matter.

Mr. **Blanchard**. I am curious as to what effect you think the elimination of the Large Lakes Laboratory at Grosse Ile, Mich., would have on the surveillance of toxics or the study of the effects of toxics in the Great Lakes.

Mr. **McEwen**. Mr. Chairman, I have to confess that I know about the lab, I heard about it when we held our annual meeting with the Water Quality Board and the Science Advisory Board in Cleveland. I have not yet had the opportunity to visit it. I hope it may stay open until I can. But I must honestly say I am not familiar with the specific work they are doing.

Mr. **Blanchard**. Thank you. Representative Schneider?

Mrs. **Schneider**. Your testimony mentions the need for the United States and Canada to honor their obligations, and I can, certainly, understand the need to maintain the necessary resources to protect the Great Lakes.

Are you under the impression that the United States is upholding their end of their commitment?

Mr. **McEwen**. I would answer yes, with one caveat. It may be that we are slipping a little behind what was hoped for earlier as the date for completing this work.

I think, Mrs. Schneider, and possibly Mr. Sugarman, may be speaking to this when he gives you his testimony, we on this side in the United States have done better than we may be perceived to have done. When our Science Advisory Board in our meetings in

Cleveland some weeks ago spoke critically of cuts in research on the U.S. side, it seemed to me from reading the press, and particularly in the Canadian press where there is so much interest in this, I thought it was maybe magnified a little bit.

So, I think I share a view that Mr. Sugarman expressed not long ago before one of the committees of our Congress that we really have done better than we may be believed to have done or perceived to have done.

Mrs. **Schneider**. But as you look toward the future, given the proposed cuts, do you feel that there is the intention to continue that commitment?

Mr. **McEwen**. I see no indication that there isn't. It is a matter of implementing that commitment, coordinating the effort to carry it out. And we have made progress.

Mr. Chairman, when we had our hearings in Cleveland, here I am, like a professional lawyer, 16 years in Congress, a generalist and not a specialist, and we are up to our armpits in toxicologists and epidemiologists and limnologists and all of these specialists, and finally, thinking about my neighbors where I live on the shore of the St. Lawrence River, which is downriver from Lake Ontario, which is downriver from Niagara, which is downriver from everybody, so we get all the pollution, I said, "How do I answer my neighbors these three basic questions, three words. Let's take Lake Ontario: Swim, drink, fish."

And the answer I was given by the witness, could we drink the water, could we swim, and could we fish, and he said, "Yes, yes, and a limited amount of fish."

Then later on another witness came to the stand and he said, "Mr. Chairman, I would like to respond to the question you raised earlier about swim, drink, eat. In the light of what it would be if we had not made accomplishments in the last 10 years," he said, "if we hadn't done what we have done in the last 10 years, the answers would be no, hell no, and what fish?"

So, we have made progress. I can say as a riparian property owner on the St. Lawrence, not too many years ago, I can remember in every lake in the summer every year the obnoxious smell of decaying cladophora, which is a particularly stinking form of algae. Well, with the removal of phosphorous, the eutrophication, the dying of Lake Erie, we have made a great turnaround.

I am pleased to report, and I hope I don't see this summer what I have seen in some years; masses of cladophora. So, we have made some real progress; no question about it.

But as I said in my statement, the 1972 agreement really addressed our concern over the lower lakes, Lake Erie and Lake Ontario, and particularly Lake Erie as a dying lake through the rapid eutrophication from primarily phosphorous. The 1978 agreement went way beyond that, to look at the ecosystem approach, to look at all of these toxic substances on which there is so much yet to be learned, what is the effect on fish and on us when we eat the fish and we drink the water.

Mrs. **Schneider**. Thank you.

Thank you, Mr. Chairman.

Mr. **Blanchard**. Mr. Chairman?

Mr. **Scheuer**. No questions.

Mr. **Blanchard**. Mr. Sensenbrenner?

Mr. **Sensenbrenner**. No questions, Mr. Chairman.

Mr. **McEwen**. How are you?

Mr. **Sensenbrenner**. Welcome back, Bob.

Mr. **McEwen**. Thank you.

Mr. **Blanchard**. We want to thank you for being with us.

Mr. **McEwen**. And thanks to Mr. Burby and your staff, who have been most helpful in furnishing some information to us.

Mr. **Blanchard**. Please keep us posted if we can be of help. Thank you.

Our next witnesses will testify as a panel. The witnesses will be Mr. James Fish, who is the executive director of the Great Lakes Commission, representing shipping, industry, and the States concerned with Great Lakes issues. He is from Ann Arbor, Mich.

Mr. Fish will be joined by the former Chairman of the U.S. section of the International Joint Commission, Mr. Robert Sugarman, who is now a private attorney and very experienced in addressing Great Lakes water quality and pollution problems. He has been of help to me on those subjects for several years. Thank you for being with us.

STATEMENTS OF ROBERT SUGARMAN, FORMER CHAIRMAN, U.S. SECTION, INTERNATIONAL JOINT COMMISSION; AND JAMES FISH, EXECUTIVE DIRECTOR, GREAT LAKES COMMISSION, ANN ARBOR, MICH.

Mr. **Sugarman**. Thank you very much, Mr. Chairman.

Do you have any preference as to whether Mr. Fish or myself should proceed first?

Mr. **Blanchard**. You may proceed in any order you'd like.

Mr. **Sugarman**. As the older and more patient type of personality, Mr. Fish has allowed me to make my exit before he makes his entrance, so I will, with thanks to him, proceed.

Mr. Chairman, it is a pleasure and an honor to be here before this distinguished committee and yourself as the distinguished chairman and the author of this important legislation.

This committee has a reputation, in part through your initiative, of having bailed out Great Lakes programs over the past few years. I think it is a well-deserved reputation and it is an important accomplishment that has enabled us to talk about whether the Grosse Ile lab should be closed today. Had this committee and you not been doing the job for the past 4 years, it would have long ago been closed.

So, I think in that connection, it also is, as Mr. McEwen, my distinguished successor has stated, a bipartisan matter on the Great Lakes. The problems are bipartisan, and I think the support in my experience on the International Joint Commission was also bipartisan, and fortunately so.

Chairman McEwen has well described the International Joint Commission and its concern for the lakes, and the basis for it, so that more than adequately describes the exposure that I had as Chairman of the U.S. section for several years, which led me to have the perspective that I have on the Great Lakes and their problems.

As a result of my experience in working with the problems on the Great Lakes, I am convinced that the problem of preserving the Great Lakes as a resource is one of the most critical and immediate environmental issues confronting our country. The Great Lakes, as Chairman McEwen has stated, are among, if not the most important fresh water resource of the United States, and also are among, if not the most threatened of any such resource.

The reason for that, in my perception, is essentially this: although the Great Lakes are a river system, the lakes detain the water that flows through them for an infinitely more extensive time than is the case with any other river system. For that reason, once a substance is in the lakes, it is in the lakes for a long time. It is in the lakes, for all intents and purposes, for all time.

Because of the limitations of the cleansing mechanism, and as Professor Ragotzkie will describe in more detail than I can, because of the behavior of chemicals within the Great Lakes, it is crucial that there be comprehensive awareness and understanding and control over the materials that enter the Great Lakes and over the protection that those waters are afforded.

In this situation, it is, I think, extremely significant with respect to H.R. 3600 that our Commission found that there was a severe gap in the extent of comprehensive awareness of the problems facing the lakes and of a comprehensive, coordinated response to those problems, and in a correlative lack of visibility of those problems at the national level.

Addressing the first issue, the International Joint Commission in a report that was issued while I was serving on the Commission concluded that there is a serious problem of lack of coordination of U.S. agencies and recommended that measures be taken to correct that problem.

With respect to the second issue, the question of coordination with respect to remedial programs and protective programs, our Commission found that there was a severe inadequacy of such coordination because of the divergent responsibilities of the Great Lakes agencies.

I came to believe that this problem occurred in large part because, as I have characterized it, the Great Lakes fall between the cracks of the American national government. They are neither in any single State which would entitle them to the representation of a delegation in Congress and a voice in the Executive branch through that delegation, nor are they national, which would insure them a national constituency.

Being neither confined to a single district nor national in scope, they tend to fall between the cracks. No single State has the responsibility or the capability to represent the Great Lakes.

H.R. 3600, in my judgment, Mr. Chairman, responds in a dramatic, significant, and efficient way to both of those problems. By providing a Great Lakes office, it enables one body, and a small body at that, not to necessarily engage in substantial new amounts of research but to insure that the limited dollars that are available are spent effectively and efficiently to get the most bang for the buck.

With respect to action programs and management and enforcement, sections 203 and 204 of the bill as introduced, I think, effectively deal with the problem of the failure of U.S. agencies to recognize the impacts on the Great Lakes of actions that are proposed.

We found, for example, in many cases that environmental impact statements dealing with actions on tributaries or even on the lakes themselves tended to treat the environment as if it ended at the shores of the Great Lakes and did not deal with the effects on the lakes. In a way, this is understandable because in order to deal with the effects on the lakes they would have to deal with the Great Lakes system because the effects are systemic because of the unique characteristic of the lakes in being a unitary water body which, nevertheless, has long retention times.

Sections 203 and 204, by requiring Federal agencies in the environmental impact statements that they do file in any event, not to file new environmental impact statements but to insure that those impact statements deal with the effects of the projects proposed on the Great Lakes as a system would, I think, provide a significant corrective to that problem.

So, in my judgment, H.R. 3600 would respond to two of the most serious problems facing the lakes.

Now, in commenting on the specifics of the act, as H.R. 3600 would create, I would like to say that what is important in my judgment is that there be coordination of the research programs without creating a whole new bureaucracy or without spending a lot of additional money.

The question has been raised to me whether EPA could do the job as well as NOAA. In my judgment, there would be no loss in having EPA perform that function if the Congress were to deem that preferable to having NOAA do it. EPA has the Great Lakes National Program Office which does perform a significant function in that area.

The thought has also occurred to me, Mr. Chairman, that the International Joint Commission could play a role. As a former chairman, I can be excused of having an institutional bias if I say that in bringing to bear the significant international connotations of the Great Lakes problem and the ability to deal with them in an international way, the Commission has a tradition of coordinating the activities in the United States and Canada with respect particularly to the research function and, therefore, could play a role, if the Congress should so desire, in implementing that kind of international coordination.

Finally, H.R. 3600 would have significant international benefits. I would like to say that the United States has, as Chairman McEwen stated, done a significant amount in at least retarding the progress of further pollution and, in some cases, of making substantial progress in alleviating it.

One of the reasons why the United States, in my judgment, has not been able to achieve proper recognition for that activity in relationship to the Canadian achievement is the very diffusion of responsibility and the absence of a unified voice speaking for the lakes.

As I indicated in my prepared statement, I say that not in a competitive way or by way of criticism of our Canadian neighbors but, rather, that one of the functions of the Great Lakes Water Quality Agreement is to create a healthy comparison between the activities of the two countries, and the United States, in my judgment, would be in a better position to urge the Canadians to improve their efforts were there a unified spokesman within the United States to describe the American efforts.

Mr. Chairman, for the foregoing reasons, in my judgment H.R. 3600 represents a significant, valuable and needed contribution to a serious problem, and I lend you my full support in your efforts to achieve its enactment.

[Mr. Sugarman's prepared statement follows:]

TESTIMONY OF ROBERT J. SUGARMAN, ESQUIRE ON H.R. 3600 - MARCH 9, 1982

My name is Robert J. Sugarman, and I am a lawyer in private practice in Philadelphia and Washington. As former United States Co-Chairman of the International Joint Commission, United States and Canada, which monitors and evaluates water quality trends and pollution control efforts on the Great Lakes, I would like to offer my views on H.R. 3600, the proposed Great Lakes Protection Act of 1981.

The International Joint Commission is a six member bilateral body established by the Boundary Waters Treaty of 1909 between the United States and Canada. The American members are appointed by the President with the advice and consent of the Senate. Under the Boundary Waters Treaty of 1909, and under a reference made to it thereunder, in the Great Lakes Water Quality Agreements of 1972 and 1978, the International Joint Commission has dealt extensively with Great Lakes water quality issues, including virtually every policy issue that has been confronted domestically in each country. Under these and other references, the Commission has also dealt with transboundary Great Lakes air quality problems including, but not limited to, acid rain, with transboundary effects on land use, transboundary effects of land use activities on economic conditions in the impacted country. The Commission has also dealt with issues of land use, comprehensive planning, aesthetic protection, and socio-economic problems.

As a result of my experience in working with these problems, I am convinced that the problem of preserving the Great Lakes is one of the most critical and immediate environmental issues confronting our nation. The Great Lakes, as other witnesses have testified, are our most important fresh water resource, both as to quantity and uses supported. They are also as threatened by long-term pollution as any water body.

While our national environmental legislation has been and will, hopefully, continue to be effective in reducing present and otherwise inevitable future deterioration of our environment, it is not designed to cope with a standing fresh water body of the massive dimensions and scope of the Great Lakes, and neither its effluent limitations based on technology, nor its ambient levels standards based on water quality are meaningful as applied to multi-state, bi-national lakes with retention times up to 500 years, shorelines of thousands of miles, and uses which render it both unitary and divisible in a myriad of ways. For example, how can one relate discharges to water quality criteria when an ounce of mirex discharged into Lake Huron may (or may not) appear in Lake Ontario in three (or thirty) years, when the water may be used for drinking water at various intervening locations, and accumulated by fish moving upstream or downstream. In other words, far more than any other fresh water system, the Great Lakes are a permanent living environment.

Clearly, a specially focused effort is uniquely necessary for such a unique and vital environmental asset. Yet, because the Great Lakes are too large to be encompassed within any single constituency, and yet not national in their direct constituency, they tend to fall between the cracks. In my judgment, H.R. 3600 represents a most timely and appropriate response to two very difficult and important aspects of this problem, which have plagued the United States agencies in dealing with Great Lakes pollution.

First, U.S. activity has been fragmented and poorly coordinated. In its Report to the Governments of the United States and Canada on Pollution in the Great Lakes Basin from Land Use Activities, (1980), the Commission identified one of the major deficiencies in the U.S. programs as lack of coordination of effort and information among the several federal and state agencies (pp. 55-60). The Commission recommended that responsibility for such coordination be specifically placed in one body (102, ¶6). H.R. 3600 as a whole is directly responsive to that recommendation with respect to research activities. With regard to action elements, H.R. 3600 would make a significant advance in focusing, through the EIS and enforcement provisions of Sections 203 and 204, on the impact of actions through the eyes of a Great Lake perspective. This bill is also consistent with the Commission's finding that existing agencies should be utilized, and local actions stressed in dealing with this problem.

A second major subject of concern has been the lack of focus on the Great Lakes as a unitary ecosystem by federal resource protection agencies with national jurisdiction. Such efforts as EPA's Great Lakes National Program Office and the Corps of Engineers' North Central Division, while helpful in focusing administrative attention on the Lakes, do not represent a resource-oriented perspective comparable, for example, to the National Parks by the National Parks Service. The Commission has identified this concern in stressing the need for an ecosystem approach to the Great Lakes (e.g., Sixth Annual Great Lakes Water Quality Report, pp. 15-16 (1978).

This situation is unfortunate not only from the perspective of preserving and enhancing the Lakes, but also from a U.S. national interest viewpoint, for the fragmentation and lower visability of the U.S. efforts on the Great Lakes protection limits the ability of the U.S. to call our Canadian neighbors to account for their full share of this burden. Recognition of this factor implies no wrongdoing by our Canadian neighbors, but rather highlights the constructive role of each country in encouraging more responsible action by the other under our bilateral agreements and treaties. This matter was also noted with concern by the Commission in its Land Use Report and its Annual Reports on Great Lakes Water Quality (1979 and 1980). H.R. 3600, in my view, provides a very important focus for a Great Lakes policy perspective through its declaration of policy and its requirement that research planning and action efforts be focused on the Lakes as a systematic entity.

Within this framework, I would like to state that the specific provisions of Sections 202, 203 and 204 are crucial to achieving the Bill's objectives. My experience on the Commission convinced me that specific direction to the preparing agency is necessary to integrate into an EIS a whole system perspective. Just as EIS's on river discharges usually do not address the effects on the ocean, so EIS's on projects along the lakes and tributaries usually ignore the systematic impacts on the Great Lakes, and often, even the receiving Lake. The role of the Great Lakes Office in assuring coordination is equally crucial, as agencies often defer consultation until they have gotten their "act" together, and this is often too late to factor in new considerations.

For the foregoing reasons, it is my considered judgment that H.R. 3600 represents a significant, valuable and needed contribution to a serious problem, and I wish to convey my full support of its passage. I am available for any questions.

Mr. **Blanchard**. Thank you.

We will now turn to Jim Fish and then we will proceed with questions after that.

Mr. **Fish**. Mr. Chairman, I believe it was stated earlier that the full text would be entered into the record, so I will summarize it.

First of all, I would like to say that it is a personal joy to come before a committee where the eyes don't glaze over when the phrase Great Lakes is mentioned. As one who has the opportunity and responsibility to testify before Congress often, that is precisely what happens. I think you, the chairman of the subcommittee, and the other members are to be commended for the interest that you have taken historically, and that you are taking now, in promoting the Great Lakes issues and, in fact, doing something about them.

The Great Lakes Commission, as an interstate compact commission, was formed by the States and then given consent to by the Congress. As such, its concerns range from the regional economic issues to the regional environmental issues. They take a broad span and with a limited staff we attempt to respond to the States concerns and address the issues before Congress.

We have recently received an added responsibility. With the untimely termination of the Great Lakes Basin Commission and other basin commissions, the States requested us to assume some of those responsibilities and to begin to perform some additional activities which we had previously not been involved in. We are attempting to involve all of the Federal agencies with a role on the Great Lakes in this effort and expect each of them to have designated some advisors for our commission by the time of our meeting this spring.

It has already been stated that the Great Lakes economy is a water economy. It is a water economy in terms of transportation, as mentioned by one of the members, in terms of recreation, and in terms of the supplies for the communities that border the Great Lakes. That water is, in fact, the jobs for the people of the Great Lakes and, as such, whether it be shipping or recreation or supplies for industry or domestic use, it is critical to keep in mind that the Great Lakes Region grew because of the water and cannot continue without protecting that water.

Also mentioned earlier was the relationship with Canada. I think too often many of us on this side of the border forget that that is not only a U.S. resource; it is a North American resource. In fact, all of the Federal laws since the Northwest Ordinance of 1787 have recognized the border and the international aspect of it.

I would point out that the proposed reductions in the research on the lakes, I think, are essentially a national shame. With the proposed elimination of the Large Lakes Laboratory, the Great Lakes Environmental Research Laboratory, the reductions in the Great Lakes Program Office, in the Argonne National Laboratory program, and the elimination of sea grant, those activities would simply decimate the research activity.

The States, I do not believe, are in a position to pick up those kinds of things. I do not believe they have the authority, in effect, to pick up the national responsibilities that are incumbent in the Great Lakes.

With regard to the research, we talked about the water as an economic value. I would suggest that the research which has gone on has in fact contributed to the economy of that region. Without that research, without the better description of the problems and the identification of implementable solutions, our economy would be in a lot worse shape than it is now. In fact, that water is much more valuable as a recreational asset, as an industrial asset, than it was 10 years ago because we have been able to at least arrest some of the degradation that was going on.

I just simply think that the research and development which is being cut out is economically unsound. I urge and commend your efforts in reinstating the finding, as you have before and as I know you are attempting now. The Great Lakes Protection Act, I think, sets up an opportunity for a coordination which has not previously been present.

I would express a concern that the goals that we are setting may be more than we can reach, and I know this is a standard way of writing. I only raise this question because many of our governmental programs set a goal which is unachievable and then lose the confidence of the public that they were attempting to serve. It is a problem that we all face.

The office that is to be established is a small one, and purposefully so. I am concerned that with the limited budget that is available to them, the limited staffing, that they may not be able to have the impact on coordination unless they are tied directly into an existing agency that can provide them the total support, house them, and permit them to go about their business without a lot of administrative headaches that most small agencies face.

The Great Lakes environmental impact analysis, I think, is something that has been long missing. Former Chairman Sugarman has, described it well. The fact is that the system cannot stand the repeated impacts even of small additions of pollutants, whatever they be. We simply haven't considered the overall impacts.

As I indicated in the testimony, even some of the environmental planning programs did not assess the systemwide impact and it was left to other agencies to go back over that work and try to compile and assess those overall impacts.

Dredging is another issue. We dredge harbors and we consider only a very small area, whether they be recreational or commercial. In fact, in the commercial area I think it is a well established fact by now that we probably have too many commercial harbors, and home is the place where we probably have the most, Congressman, in Michigan. It is a problem to maintain these facilities properly.

In this area, however, I think we have to be very careful in our definitions. The question of a "significant impact," of a "significant effort," is one that could lead us to some mischievous lawsuits which might, through a supportive court, change the meaning of the law as I understand you are designing it. That has happened in the past, and as Chairman McEwen mentioned, we need to be very careful in those areas.

Likewise, we should provide the executive director with certain guidance in terms of his time and response, because I would expect that if he is to comment then the Federal agencies must also review those comments and respond to them.

In another area, I am concerned that the State and Federal agencies do not have a direct role. We have said in one case that it is the policy that all should coordinate; on the other hand, we don't necessarily say how. In those terms, it may be setting up a more restrictive legislation, but much of the experience with voluntary participation or consensus operation has been not wholly successful and I would suggest that the help and the guidance that this executive director might get from agencies whose budget he might affect would be limited and might not be as successful as we would hope.

One other thing that I should mention, because there is significant concern from many of the port interests who contacted me upon finding that I might be here, they believe the environmental impact analysis might add another layer of bureacracy. They are concerned. They are not denying the need for something like this and, in fact, one of the questions, to quote from a port director, was:

Is it really needed? If it is, let's have it, but let's not have another bureaucratic layer that we have to go through and another impediment to something that might help balance out our economy.

In that light, I would suggest that if this is fully considered for application to the Great Lakes, it would seem to me under the NOAA mandate that there are potentially similar conditions in terms of estuarine areas, river outlets, in the Delaware, the Chesapeake, possibly the Mississippi outlet in Louisiana, and other areas in the United States where this same principle of a system-wide impact analysis or impact appendix might well be considered as you look at the overall National Ocean Pollution Planning Act. I think this might be something the committee would like to look at, if not this year, then in later years.

Mr. Chairman, that concludes the remarks for today. I would be pleased to answer your questions.

[Mr. Fish's prepared statement follows:]

Statement of James Fish
Executive Director, Great Lakes Commission

Testimony of James Fish, Executive Director, Great Lakes Commission

Before the Subcommittee on Natural Resources & Environment, Committee on Science & Technology, March 9, 1982

Mr. Chairman, Members of the Committee:

I am James Fish, Executive Director of the Great Lakes Commission. I am pleased to be here to speak on the general subject of research and development relating to the waters of the Great Lakes and the specific topic of the "Great Lakes Protection Act proposed by Mr. Blanchard.

Because the Great Lakes Commission has not previously appeared before the Committee, I believe it is appropriate to include background on the Great Lakes Commission, water resources of the Great Lakes, and the Great Lakes regional economy which depends today, as in the past, to a large degree on water for its national and international viability.

The Great Lakes Commission

The Commission is an Interstate Compact Commission formed in 1955 by the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. The Commission is funded solely and determinately by these eight States; there is no federal funding. The Commission's concerns range from regional economic issues such as industrial development, imports and exports, ports and shipping to the resource management issues of water supply, water quality, shoreline use, recreation and fisheries management.

The Great Lakes Commission is charged with representing the collective interests of the State Legislators, the Governors and State water administrators to the Congress and to the federal agencies as policies are developed. We work with unions, shipping companies, ports, environmental groups, academic institutions, federal agencies, state agencies, and associations of all of the foregoing. We also serve as an information and referral service for groups and individuals with specifc problems.

In August of 1981 the Great Lakes Commission was designated by the eight States bordering the Great Lakes as the organization to succeed the federally authorized Great Lakes Basin Commission in certain of its functions. Although the Great Lakes Commission would have preferred continuation of the River Basin Commissions, federal Administration action precluded this option. The Great Lakes Commission has also received, again by action of the States, the unobligated fund balances of the Great Lakes Basin Commission. To meet this new challenge, and the opportunities for regional service it brings, the Great Lakes Commission is revising its committee and staff structure.

To facilitate increased federal/state coordination, the Great Lakes Commission has invited all federal agencies involved with the terminated Great Lakes Basin Commission to take an active role in Great Lakes Commission activities. Each agency has been invited to designate advisors to our committees and add their expertise to that of our Commissioners and State designated technical and policy advisors. Federal agencies are making these designations and we expect a full complement of federal participants at our May 1982 Semi-Annual meeting.

Recently the Great Lakes Commission lead a study to determine how exports from the Great Lakes region could be increased through improved marketing and utilization of the Great Lakes/St. Lawrence Seaway transportation system. This study was initiated at the request of the Great Lakes ports, shippers and States. The results of the study are now being disseminated to the States and to private industry. As an outgrowth of this study the Governors of the Great Lakes States have asked the GLC to take a more active role in the general area of economic development.

During 1981, Governor William Milliken (Mich.) requested that the Great Lakes Commission work with his representatives and representatives of the seven other Great Lakes Governors to develop an overall transportation strategy for these eight States. The strategy will provide a guideline for State response to the numerous Administration and Congressional proposals, as well as a basis for further cooperative State actions. The initial element of that strategy was already transmitted to all Great Lakes Congressmen in the form of a position statement on user fees. Incidentally, all major elements of that strategy were recently incorporated in the National Governors' Association position statement on user fees.

To assure that there is no confusion or misunderstanding, the Great Lakes Commission maintains an invariable bottom line -- getting the job done and getting it done right, which includes full protection of our water environment. The Great Lakes are the largest body of fresh water in the world, representing one of the greatest environmental and economic assets blessing this continent. The Great Lakes Commission has not and will not stand by and permit destruction of this asset through misuse -- or through enactment of discriminatory or negative legislation on the part of the federal government. We believe in the wise use and development of this asset. As with any asset -- finanacial or resource -- water must be both protected and used in our regional and national economy if we are to continue to prosper as a country.

Great Lakes Economy

It is no accident that much of America's 19th and 20th century industrial boom took place in the Great Lakes. We have raw materials -- especially iron ore and coal -- and the water transportation system to move those as well as finished products, first on the Great Lakes, then on New York's Erie Canal and now on the St. Lawrence Seaway. Agricultural land in the Great Lakes region and its transportation hinterland has permitted this nation to not only provide food for our own people but to develop an export capacity second to none -- again, using our own Great Lakes/St. Lawrence Seaway system. Water and water transportation are vital to this Great Lakes economy just as it is to the national economy.

Transportation of raw materials -- wood, grains, coal, ore, etc., -- on the Great Lakes water system is absolutely critical to the economy of this region. Lake commerce passing through the St. Mary's canal at Sault Ste. Marie, Michigan provides the example. In 1979, 108 million tons moved while 96 million tons moved in 1980. For comparison this is about 2/3 the tonnage moving through the Panama canal in 1980. That's a lot of material. It is materials which simply could not be handled economically or in environmentally acceptable terms on overland transportation systems.

I wish the Members would think of these tonnages not just as statistics, not just as loaded ships, but rather as jobs for the people of the Great Lakes, the Midwest and the nation -- jobs for the people involved in producing the raw material, finishing, shipping and ultimately, if the system is working, as consumers with money to purchase the products with some dollars left over to save.

Major Great Lakes cities and industries draw their water from the Lakes. Without ready access to these waters there is serious question whether our economy would exist. Without the contuining availability of this water our economy would undergo a wrenching metamorphosis which would damage the nation as well as the region.

A recent statement by a western Governor relating the environment to economic growth echoes the sentiments I hear expressed continually by our own Great Lakes Governors.

> "We need to pay more attention to restoring and protecting our fish, our forests, our soil and our water. This is the true foundation of our national wealth.
>
> You may have read recently about the severe danger of soil erosion. It is not a topic that we hear about every day. Nevertheless, the food that we eat and which also provides so many export dollars derives from the soil and the water.
>
> These are the resources which must be protected and wisely managed. Yet, today more soil is shipped down the Mississippi River than corn and it won't be too many years before that top soil is gone unless we change our ways.
>
> To create one inch of top soil it takes at least 1000 years. In ancient times, Mesopotamia was every bit as proud as our own middle west. Today the soil of that area is long gone with only barren desert blowing in the wind because of inadquate understanding and the mismanagement of salt build-up, mineralization and erosion.
>
> We look at North Africa and can hardly believe it once was covered with rich forests. But mighty Rome needed wood for aquiducts, ships of war and maybe even for hot tubs.
>
> God help us if we fall into the same trap when we have the capacity to increase the productivity of our own timberland by 50%. We have already embarked upon a major program of reforestation through funds derived from geothermal, oil and gas revenues. Our philosophy is to tax our nonrenewable resources, the depletable resources, and redirect the funding into the renewable resources.

> With respect to fisheries, we face more than a 50% decline from historic levels. We can reverse this but only by clearing thousands of miles of streams throughout State. And that is precisely what we are doing through our conservation corps. As for water, we intend to recycle at least 400 thousand acre feet and even more if our desalting plants perform as well as expected.
>
> As we come to understand our staggering health costs from toxics and pesticides, moreover we need a national priority on toxics clean-up. Recent State legislation creating a SUPERFUND to clean-up existing dumps, enacting stronger penalties for violation, and offering workers a toxics "right to know" point the way to the national policy we need.
>
> Environment and growth are not opposed -- they are inextricably linked. Wise, careful, caring use of our natural resources produces the wealth that is at the foundation of our civilation."

Ultimately, it is critical to keep in mind that the Great Lakes economy is a water economy. The commerce and industry that grew in our cities of the Lakes requires great volumes of fresh clean water and water transportation continues to be a critical factor in our economy.

Great Lakes Water - A North American Resource

Most of the time we consider the Great Lakes as solely a United States resource, but they are not. They are truly a North American resource shared with our freindly neighbor - Canada. While 95% of the United States fresh water is contained in the Great Lakes, we tend to forget that Canada can make proportional claims. Liekwise our industires withdraw 37 billion gallons of water per day from the Great Lakes. Canada's industries withdraw proportional amounts. Our citizens enjoy the recreational assets of the Great Lakes as do Canadians.

But emerging federal policy, from both the previous and current Administration define Great Lakes issues and problems as regional in nature, not national.

All federal laws from the Northwest Ordinance of 1787 forward recognize the international boundary created by the Great Lakes and assigned to the federal government the right and responsibiilty for developing and maintaining our commitments to our northern neighbor.

The proposed reductions in federal commitments to research on environmental problems in the Great Lakes and development of implementable solution calls into serious question our ability to meet our international commitments. Closing the Great Lakes Environmental Research Laboratory (NOAA), the Large Lakes Laboratory (EPA), along with massive reductions in the Great Lakes Program Office (EPA), the Argonne National Laboratory (DOE), and Sea Grant (NOAA), will disseminate the existing Great Lakes research programs and will virtually eliminate federal research commitments to this resource.

The States are prepared to meet their responsbilities to the Great Lakes, even in times of economic difficulty. They are not, however, prepared to assume a federal responsibility without a concurrent grant of authority. This would require a reduction in State Department activity and, we believe, would be both impossible to achieve and inappropriate to request. While we expect the Canadians to comply with agreements concerning the Lakes, we cannot lessen our own -- or even appear to do so. The Lakes are a joint resource.

Water, Money, Research and Development

Throughout this testimony I have referenced water as an economic commodity contributing to the economic viability of the Great Lakes region. We have been doubly blessed over the years in having both quantities of water to meet our needs and a quality of water to meet our needs. Until recently most Great Lakes cities needed little if any purification of water for their municipal and industiral services. Because of this, water was almost a "free good" in the economic sense.

However, with the announcements in the early 1960s that Lake Erie was dying and the more recent discovery of toxic and hazardous contaminents, the value of our remaining clean waters began to be clear and the importance of efforts to rehabilitate polluted areas became paramount. It was clear that our water resource was degraded and its value reduced.

Research on Great Lakes water problems greatly increased our understanding of the asset we had as well as the magnitude of the issue. The development of improved solutions has permitted us to address the problems and effectively clean the water.

Today, recreational use of Great Lakes waters has increased many times compared with population growth. The cities and States of the Great Lakes region are promoting industrial location based on clean water availability. No other region of the nation can claim water supplies of the magnitude and quality available in the Great Lakes area. I personally believe that the research and development efforts on the Great Lakes assisted by the federal government have increased the dollar value of the Lakes, and consequently the return to the federal government in taxes. Without the initial research which identified and quantified problems, degradation of the Lakes would have continued, if not accelerated. Without the development of new knowledge and solutions, efforts to solve problems would have stagnated. In short, research and development on both the quantity and quality of Great Lakes waters prevented a national asset from being squandered and gave it a new and increased economic, aesthetic and environmental value.

The Great Lakes Protection Act

The cosponsors of this legislation are to be commended for their recognition of the Great Lakes as a national, not a regional, asset and resource.

As stated earlier in this testimony, the Lakes as an international boundary water are unique world-wide in their contribution to the well being of two nations and the majority of a continent. The Great Lakes Commission in its continuing policy and program development shares the view of the cosponsors that a greater awareness of the Great Lakes asset must be achieved, both to protect the environment and aesthetic aspects and to contribute to the economic revitalization of the region.

Purpose

The five-point purpose of the Act is shared by many agencies operating in the Great Lakes including the federal agencies, the GLC and the States. All have found it difficult to achieve due to conflicting primary missions of federal and State agencies. In fact, the purposes set forth would likely create an impossible mission for the staff of the Great Lakes Research Office assigned to carry out the tasks. I reiterate this concern because all too often legislation, both federal and State, establishes such high expectations that failure is preordained and governments' credibility is undermined.

The Office

The responsibilities of the Office are extraordinarily broad and are vested primarily in its Executive Director. In many ways the Office functions parallel those identified in the "Chesapeake Bay Research Coordination Act of 1980". I understand that this program was terminated under the Administration's budget constraints. Several individuals have suggested that a small office, with limited staffing, could not effectively gain the support of federal and State research agencies whose budget the Office might materially impact by negative recommendations. Past experience with interagency research coordination structures has not been positive. Members of the research community have questioned whether their freedom to seek funds for research would be limited.

These questions notwithstanding -- structures for research coordination are required. The need for researchers to be aware of colleagues' work, both completed and in progress is never greater than when funds are limited. Likewise the need for synthysis of existing research grows daily. Without a mechanism to know where we are, research may explore ever narrowing vistas leaving important new opportunities unstudied.

Great Lakes Environmental Impact Analysis

The Great Lakes Environmental Impact Analysis section needs revision from the original legislation as introduced May 1981. The need for consideration of lake-wide effect of projects and programs, whether classically environmental or developmental, has long been recognized by water management personnel.

For example, the EPA "208" plans did not consider overall Lake impact and it was left to the then functioning GLBC to review all of the plans for this aspect of impact. Likewise, continual dredging of harbors for commerce and recreational vessels is traditionally reviewed on a case-by-case basis not on a system-wide basis.

Because the Great Lakes do function as a system, continuing efforts must be made to assure that acceptable local impacts do not create unacceptable total impacts on the system.

However, there is a question regarding the determination of "Significance" assigned to the Executive Director in Section 203. Several have suggested this may lead to added and unneccessary regulation of Great Lakes development. While there is no thought of this by the cosponsors, similar legislation has lead to mischievous law suits and supportive courts to outcomes far beyond the desires of the original sponsors. For example, a law suit regarding the adequacy of the required Great Lakes ~~Summary~~ could totally redefine the Act beyond any sponsor's wishes. Appendix

Likewise, because it can be assumed the Executive Director must submit comments on the EIS's and presumably the federal agency must consider his comments, there should be a time limit for receipt of such comments. Approximately 30 days would seem appropriate.

State and Federal Agency Roles

The role and responsiblity of the respective State and federal agencies in this legislation is primarily to cooperate with the Office. None have been granted an active participatory function. Prior efforts along these lines for either research or implementation have been ineffective in affecting policy or function changes. Possibly, however, limited budgets will lead to a more cooperative spirit and a reduction of traditional turf claims.

If the Office, through its Executive Director,is to make recommendations for changes in programs of research and development, some mechanism for active concurrence should be created. Governors or State agency heads, along with university researchers and federal agency heads signing off on recommendation would be a minimum participation. A Board similar to that in Sec. 5 of the "Chesapeake Bay Resource Coordination Act" would be a stronger vehicle.

With regard to recommendations, the reporting requirements mandate submission only to the President and Congress while the recommendations are directed to changes in federal, state and local activities. All reports must receive wide distribution, but as a minimum requirement must include early presentation to Governors and affected state and local agency heads.

Summary

Mr. Chairman, Members of the Committee, I appreciate the opportunity to talk with you about Great Lakes issues. Research and development on environmental issues effect our total way of life and cannot be underemphasized.

I hope my comments will be of help to you as you move forward in your consideration of this legislation. I stand ready to answer your questions now and later by written response.

Thank you.

Mr. **Blanchard**. That has been very helpful. Thank you.

Have you seen the substitute language that the staff prepared on the bill? There are slight modifications. The proposed changes are largely directed at streamlining section 203, requiring that Environmental impact statements prepared for projects in the Great Lakes basin be sensitive to the environmental problems of the Great Lakes, and that we simply red-flag actions that could substantially impact the lakes.

We would certainly look forward, also, to any specific suggestions you have as to how we write the legislative language to achieve our purposes.

I couldn't help but hear you say that you felt the proposed budget reductions relating to Great Lakes research were a national shame.

Mr. Sugarman, do you share that feeling?

Mr. **Sugarman**. Very much so, Mr. Chairman. I have been informed that the EPA Large Lakes Research Station would be eliminated entirely, the NOAA Great Lakes Environmental Research Laboratory would be eliminated entirely, the Great Lakes National Program Office of EPA would be cut by two-thirds, the National Sea Grant College program would be terminated in 1983, and that these come on top of the previous termination of the Great Lakes Basin Commission and the Argonne National Laboratory Great Lakes program.

I think that the scope and the breadth of those terminations suggests that it is not a decision as to priorities among these organizations as to where the most effective research is being done, or what the priority needs are but, rather, a simple across-the-board decision regardless of those matters, to simply cut this activity.

As I have said in my initial statement, the Great Lakes are a unique resource. They require research as such. To terminate the programs entirely is to run a very severe risk as to our ability to protect the lakes, as well as on the international front, to essentially renege on our obligation to Canada.

Mr. **Fish**. Mr. Chairman, if I may, I think that as we have performed the research, as we have moved through this period of time from the first announcement that Lake Erie was dying, our research methods, our abilities, have improved so much. We have solved a number of problems, as has been stated by earlier witnesses. We have identified a number of new problems because we have a better research technology. We need to go ahead and find the solutions to those and keep at it. They do not go away.

Mr. **Blanchard**. I think that is an important point to follow up on. There are a lot of people who, of course, understand that the water quality in the Great Lakes in many ways has improved, but they go on to say there is, therefore, no longer a need for testing and research.

I take it you are directly refuting that now.

Mr. **Fish**. I am not sure I can totally accomplish that, but I would like to try.

Mr. **Sugarman**. I would second that, Mr. Chairman.

Our society is constantly moving in different directions, and evolving new technologies and new activities. That has very great benefits to our country.

At the same time, associated with those new activities and new directions are potential dangers. It is not an adequate response to those dangers to continue taking the corrective actions that we are taking in response to yesterday's activities and yesterday's directions. We want to be in a position with respect to the Great Lakes to engage in new economic activities. The associated costs have to be known, and knowing them requires research.

Mr. **Blanchard**. Is that why, Mr. Fish, you said that cutting out research would be economically unsound?

Mr. **Fish**. Correct.

Mr. **Blanchard**. You are somewhat skeptical about how well we can provide for coordination of Great Lakes research programs. Do you think it is worth the attempt?

Mr. **Fish**. I think it is worth the attempt, but I guess it comes to an observation of some other activities. Quite honestly, the attempt to coordinate in the area of water resources which, in fact, after approximately 15 years was just beginning to be able to accomplish its original objective, and by that time people had become so tired of it that we couldn't save it, and we tried. In other research activities on the Federal level, the Council on Water Resources Research, for example, which was never a respected body being able to review and identify some directions because the agencies who were participants, had a separate mission.

I am not sure how we do that except to almost write into their appropriations that they will. That is a mean way to do it, if you will permit me that phrasing. But it is stated in all legislation, or in most legislation, that people are to cooperate and coordinate. However, the primary mission of the agency is not to do that.

Mr. **Blanchard**. We understand that. That is the reason we set up one office, a modest office, to do an inventory, have a staff, have a director, and begin to take a look at all the things that are going on with regard to Great Lakes water quality research.

Mr. **Fish**. That office would be able to utilize, I would hope, some of the research, some of the efforts which have been at least programed to identify research and to identify environmental impacts which have already been done by some of the Federal agencies if, in fact, they would share. I say that because they would rather implement themselves in some cases.

Mr. **Blanchard**. Of course, right now it may be that we are simply going to be trying to preserve those programs, because we may not have anything left to coordinate if the budget cuts are to be implemented.

Mr. **Sugarman**. Well, Mr. Chairman, I think that that provides yet another benefit from coordination. In a situation where there are limited resources, there is a strong value in having those resources used in the most effective way to address the most important priorities. A coordinating function which can help to order those priorities cannot help but improve the ability to spend the available money in the most productive fashion.

Mr. **Fish**. It may also serve at this time, at this point in time of limited resources, to encourage those agencies to work together so that they can continue more of their work by working together rather than going on independent tracks and possibly duplicating or having to apply more to the hardware and less to the research. I think it may be a good time to try it again.

Mr. **Blanchard**. That is one of our objectives.

Mr. **Fish**. It is critical, however, I think, the point you made, that we may not have anything left to coordinate, so we have to attack it on both fronts.

Mr. **Blanchard**. Regarding the economic impact of making sure the lakes are understood, studied, and the quality of them monitored, can you give us some specific examples? You mentioned that eliminating research without understanding its benefits is economically unsound.

Mr. **Fish**. If we simply look at what has happened in Lake Erie, which I mentioned in my testimony, and others have, that in fact what we thought, or what was described as a dying lake is coming back. The fishing, in terms of recreational fishing, is as good as it has been in memory, and they are catching more fish, there are more angler fishing days, and in fact the State of Ohio is encouraging that because for its economy that is a better use of the resource than is a commercial fishing industry.

I think that is one direct example. The simple thing of keeping the waters clean, which requires upstream solutions which we are generating, reduces the cost to lake communities and other downstream communities in their water treatment.

Those are two direct things. Our industry, in terms of the industrial production, requires fresh water for the most part.

Mr. **Blanchard**. Let me ask you about diversion. In your judgement, how does diversion affect something like shipping? Do you have any data here? Have you looked at it?

Mr. **Fish**. The most current information was developed by the International Joint Commission in a special study group which I have to admit—I think it is a 17-volume study, and I can't say I have gotten through it—but I can say that if there was a diversion which reduced the depths, and quite frankly there is no move afoot that I am aware of, nor any particular support for deepening Great Lakes channels, besides the fact that it would be environmentally unsound if not totally damaging, the costs are horrendous to go deeper than we are now.

So if you begin to reduce the depths of the water, I think inches is the best way to describe it, one inch on a 730-foot lake vessel equals about 115 tons of cargo. On a 1000-foot vessel, it is like 175 to 200 tons of cargo. That doesn't seem like a lot in terms of one voyage, 200 tons of cargo; but that is a vessel which makes 40 voyages or 50 voyages a year, and then it does begin to make a difference. That is a whole shipload of cargo that hasn't been moved with that vessel.

So it does make a difference. As I understand, the lake carriers' position is to maintain the depths as they are. They have only one critical area that they would like to see fixed, and that is in Whitefish Bay and it is called Vital Shoals, which is in fact the controlling depth of the system, not the locks.

Mr. **Sugarman**. I was just going to add to what Jim says, that when you add up those 115 to 200 tons per cargo over the number of ships that habitually or are expected to utilize the lakes, the average annual estimated damages by the Lake Erie Regulation Board was $10 million per inch.

Mr. **Blanchard**. Those are all the questions I have.

We look forward to working with you on this legislation and related matters. Thank you for taking the time to be on hand.

Mr. **Sugarman**. Thank you, Mr. Chairman.

Mr. **Blanchard**. Our next panel includes Ms. Lee Botts, former director of the Great Lakes Basin Commission, and presently a professor at Northwestern University, as well as Dr. Robert Ragotzkie, director of the Sea Grant Institute at the University of Wisconsin in Madison. He is recognized as the leading expert on Great Lakes research.

Both of our witnesses have spent considerable time on Great Lakes matters and we welcome them.

Ms. Botts, why don't we begin with you?

STATEMENTS OF LEE BOTTS, FORMER DIRECTOR, GREAT LAKES BASIN COMMISSION, ANN ARBOR, MICH.; AND ROBERT RAGOTZKIE, DIRECTOR, SEA GRANT INSTITUTE, UNIVERSITY OF WISCONSIN-MADISON, MADISON, WIS.

Ms. **Botts**. All right. Thank you very much for the opportunity to talk about one of my favorite subjects, the Great Lakes.

I have submitted written testimony and will not go through it. I would like to address what I consider to be the chief issues here today.

My testimony calls attention to the extent to which the Great Lakes have provided an early warning system to the world about the problem of toxic contamination of ecosystems, Great Lakes research, and the successful efforts to deal with Great Lakes problems have provided leadership in solving some kinds of problems, but we have not solved the problem of the toxic contamination of the Great Lakes.

The two chief issues for the Congress to consider are the continuation of Great Lakes research which has been talked about here so much today, and the question of where and how that research would be managed.

In my testimony, I talk about the historical difficulties that we have had in trying to convince Washington-based decisionmakers about the importance of the Great Lakes and the difficulties that have been created because of the lack of appreciation for the Great Lakes in Washington. I have tried to explain why I feel it is so important that Great Lakes research be managed at the regional level. It is not possible for it to be taken care of at the State level.

Our experience with Washington has repeatedly shown us that even though the Great Lakes have been designated as the fourth seacoast, this in a way has added to our problems. That was an attempt by Congress to get equal attention for the Great Lakes, but unfortunately, the people in Washington who were making the decisions were people who are knowledgeable about ocean problems. The Great Lakes are essentially different; not only essentially different, they are such a large system and such a large resource that I believe an exception is justified in allowing management of research for the Great Lakes to be made at the regional level.

The issue is whether the uniqueness of the resource and the importance of the resource would justify management at the regional level. Our experience has been, and understandably, that the Washington headquarters of agencies like EPA, like NOAA, do not wish to relinquish control over the research programs.

One final point I would like to comment on is that there has been reference here today to a number of different Great Lakes programs. If you just look at a list of programs dealing with Great Lakes research, it might appear that there would have to be duplication and redundancy.

The fact of the matter is, that has not been the case. The Great Lakes research community has, on its own, coordinated with each other, and through the International Joint Commission to quite a remarkable extent. When we lose one lab, it is like cutting off an arm; when we lose another lab, it is like cutting off the other arm. There is no way that there can be compensation across these programs.

So I am gratified that this subcommittee is so aware of the need for Great Lakes research, and I believe that H.R. 3600 addresses the need to provide for the management and coordination of those programs at the regional level.

[Ms. Botts' prepared statement follows:]

March 9, 1982

From:

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STATEMENT TO THE HOUSE SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH AND ENVIRONMENT CONCERNING H.R. 3600: THE NEED FOR REGIONAL CONTROL OF FEDERAL GREAT LAKES RESEARCH FUNDS AND PROGRAMS

My name is Lee Botts and I am grateful for the opportunity to discuss the reasons why the nation will be better served if Great Lakes research programs are managed at the regional level in an institution like the Great Lakes Research Office that is proposed in H.R. 3600.

My knowledge of federal and state Great Lakes research problems is based on continuous direct experience inside and outside the government for the past dozen years. Beginning in the mid-1960s, when the Lake Michigan Enforcement Conference was established under the 1965 Federal Water Pollution Control Act, I participated as a volunteer citizen activist in seeking more attention to Great Lakes problems. After organizing a regional coalition of citizen groups in four states as the Lake Michigan Federation, I served as executive director of that organization from 1970 to 1975, participating directly in development and debate on the 1972 Great Lakes Water Quality Agreement with Canada, legislation such as the Clean Water Act and the Coastal Zone Management Act, and numerous implementation processes under both state and federal laws affecting the Great Lakes.

From 1975 to 1978 I was on the Region 5 staff of the U.S. Environmental Protection Agency where my responsibilities concerned most of the same issues but from the perspective of the EPA regulatory mission. In 1978 I was appointed chairman of the Great Lakes Basin Commission, where my responsibility broadened to fostering coordination among the eight Great Lakes States and 11 federal agencies in planning for the long-term future of the Great Lakes system and related lands. With the demise of the Basin Commission, I was separated from federal service as of September 30, 1981. I am now working on Great Lakes issues from yet another perspective as a research associate at the Center for Urban Affairs and Policy Research of Northwestern University.

My experience with Great Lakes management convinces me that their protection as a national and world resource will be better served by coordination of research at the regional level and that such coordination will not be achieved from Washington. The record shows that the Washington headquarters of the federal agencies neither appreciate the value of the Great Lakes as a resource nor the significance of Great Lakes problems for the world at large. It also shows that cooperation and coordination on the regional level is both possible and efficient in addressing major ecosystem issues.

The myopia about the Great Lakes and the resistance to giving adequate attention to then is not a partisan affliction. It has been suffered under both Democratic and Republican administrations, although the current case seems to be the worst yet. Lack of knowledge may be the chief reason for Washington's lack of appreciation, for the Great Lakes are located in that distant and little known part of the country between the two coasts and is part of the currently ill-favored Snow Belt. Unfortunately, the designation of the Great Lakes as the fourth seacoast, a Congressional action intended to provide parity under programs of the National Oceanic and Atmospheric Administration and other agencies, has in some respects made the problem worse.

Although long ago described as Inland Seas because of their size, the Great Lakes are essentially different from the oceans. Jacques Cousteau tried to get more attention to the Great Lakes by calling them the cradle of the oceans, but the Great Lakes are different from and cannot be dealt with in the same way as the oceans. First, the Great Lakes contain fresh water with different kinds of problems than salt water. Second, they form an almost completely closed system, geographically and biologically.

The size of the Great Lakes makes them important as a national resource but also at times seems to be the reason Washington decisionmakers do not appreciate the significance of their problems. In the administration in which I served, high officials in EPA held up signing of the 1978 Great Lakes Water Quality Agreement with Canada for months. Their justification was that the international obligation would force undue investment in Great Lakes programs which they considered to have less severe problems than the nation's rivers and smaller lakes. This view was grounded in ignorance and was also in direct opposition to the national policy against solving pollution by dilution.

After all, they said, the offshore waters of all the lakes except Erie are pretty clean by 1978 and it appeared that Lake Erie deterioration had been reversed.

They were right by gross measures of pollution such as visible floating sewage and direct discharge of industrial wastes. They failed to understand that, while offshore waters remained unpolluted, the nearshore waters in such areas as southern Lake Michigan, Green Bay, Saginaw Bay, near Cleveland and Buffalo and in connecting channels like the Niagara and Detroit rivers remain polluted in spite of improvement. Most of all, they failed to appreciate the contamination of the entire Great Lakes system by toxic chemicals, that such contamination comes from many and much more diffuse sources and is likely to continue from new sources over a long period of time, and that we have little ability to deal with this kind of contamination of such a large system.

The only other fresh water source on earth that even approaches being comparable to the Great Lakes is Lake Baikal in Russia, which, being much deeper even than Lake Superior, contains about as much in total volume as the Great Lakes. But the Great Lakes is by far the largest fresh water system in area on earth, stretching more than a thousand miles from west to east and hundreds of miles from north to south. As a system the Great Lakes contain 20 percent of the fresh surface water on the planet and 95 percent of North America's supply. Upwards of 23 million people already depend directly on drinking water from the Great Lakes, with the likelihood thay they will be turned to even more for this purpose as groundwater either becomes depleted or is discovered to be contaminated, a process already underway.

Unlike the estuaries, bays, and coastal water of the oceans, the closed basinsof the Great Lakes are subject to relatively long retention time of pollutants. With the region's concentration of industry and population, they have been and continue to be subject to heavy pollutant loading and use. In plain language, this means that, once polluted, the lakes are likely to stay polluted. Prevention is the best and sometimes the only cure. Moreover, the study and research of recent decades has revealed that pollution both occurs in more forms and comes from more sources than had been realized. Not only have new problems been discovered, but sometimes solving one problem has created new ones. Research and monitoring must be continued if we are ever to understand fully how the Great Lakes system works and how to protect it.

Lake Erie showed the effects of pollution earlier and more obviously than the other Lakes because it is the smallest and shallowest with the fastest flow through time of three to five years. Lake Michigan's flow through time is at least a hundred years. Had Lake Michigan been allowed to reach the same stage of eutrophication as Lake Erie, it would not have been possible to reverse the changes in the foreseeable future. As it is, in spite of the great investment in sewage treatment to date and measurable results, some irreversible biological changes have already occurred in Lake Michigan, which is 600 miles long and up to 900 feet deep. The fast flow through time and shallowness of Lake Erie is also the reason that lake is less affected by toxic chemicals than its sisters.

Though the national programs like the 201 construction grant program and the industrial permit program under the Clean Water Act have benefited the lakes, the coordination among agencies that has supported progress overall has occurred at the regional level, fostered by the obligations under the first Great Lakes Water Quality Agreement signed with Canada in 1972. It has happened in spite of lack of leadership and support from Washington and failure of the Washington headquarters staffs of most agencies to keep themselves informed about Great Lakes issues.

In opposing the 1978 international agreement, EPA failed to appreciate the seriousness of the contamination of the entire Great Lakes system by toxic chemicals on which the new agreement focused. The same lack of appreciation was demonstrated the following year by NOAA when the first five-year plan under Public Law 95-273 ignored the Great Lakes toxic problem.

NOAA was the lead agency, but since the plan was supposed to reflect coordination by all federal agencies engaged in marine research, it must be assumed that the lack of knowledge and appreciation of the seriousness of the issue extended to the Washington headquarters of all the agencies. Since there was and is agreement among the scientists of those same agencies at the regional level that toxic contamination will continue to be the most serious Great Lakes problem for decades to come, then a lack of coordination between Washington program and budget makers and their regional arms must also be assumed.

This is despite the fact that the Great Lakes have been providing an early warning system to the world on problems affecting large ecosystems. Again and again as the Washington establishments have ignored the fact that what turns out to be a Great Lakes problem is also a worldwide problem, the researchers in the field have continued to cooperate and coordinate their efforts as best they can on an ad hoc basis, often under the aegis of the international effort put in place to carry out the terms of the agreement with Canada.

Consider how the PCB, or polychlorinated biphenyl, problem was addressed in this country. The manufacture and most uses of this class of chemicals are now banned under the Toxic Substances Control Act but the need for such a ban was first recognized in the Great Lakes. You will remember the many years of debate over DDT, the PCBs' chemical cousin. Rachel Carson warned the world that birds were dying because of DDT, but regulation of its use followed the demonstration that DDT in the food chain of the Great Lakes was destroying the reproductive capacity of fish-eating birds like peregrine falcons and gulls. PCBs had been in use for about 30 years and their biological effects had been studied in laboratories, but their presence in a large ecosystem was first noted in Lake Michigan.

In 1971 the Great Lakes Fishery Laboratory of the Fish and Wildlife Service reported to the last meeting of the Lake Michigan Enforcement Conference that, with monitoring of the declining levels of DDT in fish, significant levels of PCBs had been discovered. It was the first time that I personally had ever heard of PCBs, but I was impressed by the prediction of the scientists of several agencies that the presence of PCBs was a far more serious problem even than DDT because of their greater persistence and capacity for bioaccumulation in the food chain. The report was dismissed in Washington as "just a Lake Michigan problem." In 1973 the then deputy assistant administrator of EPA's national research and development program was quoted in Science magazine as saying that "PCBs are just a Great Lakes problem." Over the next two years the regional office of EPA in the Great Lakes sought support from Washington to hold a national conference on PCBs to discover whether this was true. Such a conference was finally held in November 1975, after high levels of PCBs had been discovered in the Hudson River. The administrator of EPA, Russell Train, responded to growing Congressional concern by overruling objections of EPA's Washington staff and agreeing to call a national meeting.

The conference was organized by the Chicago regional office of EPA, which obtained joint sponsorship of several other federal agencies including the Department of Interior, the Food and Drug Administration, and the Department of Agriculture. It attracted scientists from Japan, France and Sweden, and universities across the United States and did more in three days to define the PCB problem than had been accomplished in the previous three years. We now know that, just as with DDT, PCBs turned out to be present not just in the Great Lakes but in ecosystems throughout the world. We do not know yet whether the presence of PCBs is affecting the health of people of the Great Lakes, but there is growing evidence that the presence of toxic chemicals does interfere with the ability of lake trout to reproduce naturally. On the Baltic Sea, the presence of PCBs is believed to be the most likely reason for the decline of populations of seals since World War II. The list of substances which are Great Lakes and worldwide problems includes mercury, mirex, dieldrin and dioxin, and scientists believe the list is likely to continue to expand. As noted earlier, by 1978 agreement about the seriousness of the toxic contamination problem among Great Lakes scientists had been reflected in the updated international agreement of 1978, but the message had not gotten to Washington.

It still has not. In November 1981, the Great Lakes Water Quality Board told the International Joint Commission in Cleveland that there is no comprehensive management strategy for directing toxic substances activities. The bi-national board of experts cited a lack of coordinated assessment processes and fragmentation of purpose, direction and resources. Then the companion Science Advisory Board, also established for implementation of the Water Quality Agreement, expressed its concern to the IJC about the extensive cutbacks in federally supported research for the Great Lakes. Robert McEwen, recently appointed by President Reagan as chairman of the U.S. Section of the IJC, and former Congressman from New York, observed that cuts must be due to actions by the Washington headquarters of the agencies because they were so much greater than anything the administration has asked for.

When NOAA sponsored a workshop in Madison, Wisconsin, to consider how the agency should carry out its new responsibility as the lead agency for development of a coordinated five-year federal marine research plan, shortly before P.L. 95-273 was passed, the NOAA participants from Washington did not even know there was an international Great Lakes agreement with Canada that had the force of a treaty. More recently, in workshops sponsored by NOAA to obtain information to be used in fostering regional coordination for federal research, Great Lakes agencies have found themselves in a Catch 22 situation. In a workshop at Ann Arbor, Michigan last February, a NOAA representative disputed the report that regional coordination occurs among research agencies: "Why should there be," he said, "when it doesn't happen in any other region?" Consider the dismay when it was reported back a few months later that NOAA would support regional information systems in other regions because the Great Lakes already had a system--but by this time federal cutbacks were causing existing Great Lakes programs to be dismantled. Great Lakes Information, co-sponsored by the Associated Sea Grant Colleges of the Great Lakes and the Great Lakes Basin Commission, went out of business and there is no means in sight to replace it.

In summary, many experiences have demonstrated that coordination of research is necessary for the Great Lakes and useful to participating agencies, but to date has had to be achieved by ad hoc effort at the regional rather than Washington level. Continued and enhanced coordination is needed to support both identification of problems, efficient management of research and long-term monitoring. Finally, regional management of Great Lakes research will contribute to understanding not only of national but worldwide ecosystem problems.

Mr. BLANCHARD. Professor Ragotzkie?

Dr. RAGOTZKIE. Mr. Chairman, I am Robert Ragotzkie, and I am speaking today as a member of the Great Lakes research community. I appreciate the opportunity to appear before you in connection with the Great Lakes Protection Act.

I have submitted my testimony, and I will just hit the highlights now.

In the past 10 or 15 years the Great Lakes have begun a remarkable turnaround from literally decades of abuse and degradation. Many of the problems underlying this degradation and deterioration have been identified, and a good deal of action has been taken to ameliorate them.

One example might be the overfertilization of the water from domestic waste and agricultural runoff. This has degraded the water and threatened the loss of valuable fisheries, particularly in the lower lakes. Through research, we have determined the limits to the capacity of the Great Lakes to assimilate these nutrients and the vigorous and very expensive efforts have begun to reduce this overfertilization.

The question is: How will the Great Lakes benefit from our management efforts? Will the water quality continue to improve? And will the fisheries be restored?

To answer those questions, we are going to have to continue our research and our surveillance. Without such efforts, without such research, the costs of which are literally measured in millions of dollars, the result of our investment of billions of dollars to clean up the lakes will never be known, nor will we ever know if we have gone far enough.

The lakes have other problems as well, and these are increasing. The Great Lakes are, as you have heard many times, a unique and valuable resource. They lie within the most heavily populated and industrialized region of the Nation. They provide more than 25 million U.S. citizens with drinking water, and 60 million U.S. citizens with opportunities for recreation. They support a $1 billion sport fishery. Their value is immense.

But today we are concerned with an entirely new threat to these resources about which we have already heard; namely, contamination by toxic chemicals. These substances, like PCB's, Mirex, toxaphene, and a host of others, are man made. They do not degrade naturally in the lake environment. The aquatic system does not have the capacity to recycle these materials. They stay there until they either are covered by sediments or wash out as the lakes flush.

I don't want to forget the fish, either. The fish are the basis of the management and stocking policies which have created a $1 billion sport fishery and, I might add, revitalized the commercial fishery. Fisheries are tremendously important. The basis of the sport fishery is the alewife, an abundant forage fish. If we overstock the lakes with salmon and trout, or if we start harvesting the alewife in excess, we could over-balance this system and damage the benefits that we have worked so hard to create.

Our own sea grant research has developed a model that shows, that we are very close to doing just that. We must continue to monitor these fisheries. We must continue research on this, or else we could kill the goose again.

I will shorten this up and say, in short, that we have the research capacity to deal with the toxic chemical problem, the fisheries problems, with coastal resources enhancement, and with all the other Great Lakes issues. The five Great Lakes sea grant institutions have mobilized literally hundreds of university scientists to attack these problems. The Government laboratories of EPA, NOAA and the Fish and Wildlife Service have a research capability to address these problems and, in addition, EPA and the State agencies and universities have the capacity to maintain surveillance.

But in the past year, many of us have become concerned, indeed we are alarmed, at the reductions in Federal support. You have already heard a litany of this. In 1982 we saw the Federal support for proposed research in the Great Lakes drop from $20 million to $5 million a year. Not all these reductions occurred, but some did, and some of the others we don't know about yet.

For 1983 the cuts go even further. If all of the reductions that were proposed were to occur, the Great Lakes would be left only with the Fish and Wildlife Service laboratory, and with an emasculated EPA Grosse Ile Large Lakes Laboratory. Everything else would be gone.

In contrast, the Canadian Federal Government plans to continue its Great Lakes research and surveillance program at an annual level of $12.5 million a year, a slight increase over previous years, plus additional substantial funding from provincial and local sources.

Clearly, the U.S. Great Lakes program is in crisis. Cutbacks as proposed, even if they last for only 2 or 3 years, will negate the progress that has been made, and worse yet, leave untouched many of the new problems that we see coming. Worse yet, they will result in a loss of research capacity, both in the universities and in Government laboratories. This capacity will take decades to replace, and perhaps never will be replaced.

I would like to give just one example. Could another program like the sea grant college program be created today or in the next decade if we are to lose the present sea grant program? I doubt it. Even if the Federal Government were to enact a bill and fund the program, its success would be in doubt.

Universities are in a time of retrenchment, and they cannot take on new programs that require non-Federal financial commitments. The chancellor of my own university just a week and a half ago told me that the University of Wisconsin, which has one of the largest sea grant programs in the country and one which is well supported by its State, that we could not today undertake a new program like sea grant. I think many other universities would say the same thing. That capacity is there now. If it is lost, it may be lost for a long, long time.

The Great Lakes Protection Act calls for recommendations for the improvement and increased coordination of research efforts in the Great Lakes. There is no doubt that Great Lakes research would benefit from greater cooperation among research organizations in the region, and I strongly support your efforts in this bill to improve such cooperation.

I would point out, however, there is already a great deal more research cooperation than there was a decade ago. The five sea grant programs have formed a network to work together on Great Lakes issues, and for the past 4 or 5 years we have undertaken many cooperative programs. We are also exploring ways to extend similar cooperation to NOAA's environmental research lab.

A good deal of United States-Canadian cooperation also exists, particularly at the scientist-to-scientist level. In addition, the Science Advisory Board at the International Joint Commission conducts studies and assessments of the Great Lakes problems and research on an international basis. The Great Lakes Fisheries Commission has made significant progress in coordinating the management of Great Lakes fisheries.

Such cooperation needs to be extended to the entire U.S. Great Lakes research community, both universities and government laboratories. In this regard, I believe that the Great Lakes Protection Act would be greatly strengthened by the explicit recognition of universities and sea grant college programs as major participants in the research program. These organizations should also be recognized as appropriate participants in the effort to achieve broader and more effective cooperation to develop mechanisms for joint programing. Not only must we agree on the issues and the problems; we must also plan our programs in such a way that all the gaps are filled, and we must avoid duplication. Effective cooperation is going to require the efforts of the entire research community in universities and government alike.

Mr. Chairman, I thank you for the privilege of testifying today. I support the research cooperation goals of your efforts, and I greatly appreciate the continuing efforts of you and your committee and of the Congress to prevent a major retreat from the U.S. Great Lakes research programs so vital to maintaining these irreplaceable resources of our inland seas.

Thank you very much.

[Dr. Ragotzkie's prepared statement follows:]

STATEMENT OF ROBERT A. RAGOTZKIE
ON H.R. 3600, THE GREAT LAKES PROTECTION ACT
BEFORE THE SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURAL RESEARCH, AND ENVIRONMENT

March 9, 1982

I am Robert A. Ragotzkie, Professor of Meteorology at the University of Wisconsin-Madison and director of the University of Wisconsin Sea Grant College Program. I am a member and past president of the International Association of Great Lakes Research and I have just completed 3 1/2 years on the Science Advisory Board of the International Joint Commission. I am also a member of the Advisory Council of the Wisconsin Coastal Management Program. I am speaking today as a member of the Great Lakes research community.

I appreciate the opportunity to appear before you in connection with the Great Lakes Protection Act, H.R. 3600.

In the past 10-15 years the Great Lakes have begun a remarkable turn around from decades of abuse and deterioration. We have identified many of the underlying problems besetting these inland seas and have taken action to ameliorate them. For example, the overfertilization of the water from domestic wastes and agricultural runoff has resulted in serious degradation of water quality and the loss of valuable fisheries, particularly in the lower lakes.

Extensive research has uncovered the causes of this degradation and measures have been taken to correct these conditions. As an example, specific loading limits have been set for phosphorus input to the lakes and literally billions of dollars have been spent to achieve these standards. Though complete reduction of phosphorus has not yet been achieved, progress has been made.

The question now is: how will the Great Lakes benefit from our management efforts? Will water quality continue to improve? Will the fisheries be restored? To answer these questions, continued research and surveillance is essential. Without these efforts, the costs of which can be measured in millions of dollars, the result of our investment of billions of dollars to clean up the lakes will never be known. Nor will we know whether we have gone far enough in setting the present standards.

The Great Lakes have other problems too. They are a unique and valuable resource, lying within the most heavily populated and industrialized region of the nation. As such, the Great Lakes are under heavy, and increasing, pressure to provide clean drinking water for nearly 25 million U.S. citizens; high quality industrial water for a wide variety of manufacturers on their coasts; and recreational opportunities for over 60 million people. The recreational fishery alone has an estimated value to the eight Great Lakes states of over $1 billion.

Today we are concerned about a major new threat to these resources: contamination by toxic chemicals. These substances, such as PCBs, mirex, toxaphene, and a host of others, are man-made and do not degrade readily in nature The aquatic ecosystem does not have the capacity to recycle these substances as it does nutrients like phosphorus.

Consequently these substances, many of which are highly toxic and carcinogenic, tend to accumulate in the lakes. Worse yet, these chemicals concentrate in aquatic organisms, and are passed to higher and higher levels of the food chain until, as in the case of PCBs, concentrations in fish often reach a million or more times the concentration in the water. At this point, they become a potential hazard to human health.

There are many difficult and vexing problems associated with the threat of toxic substances. Their sources are widespread. Some reach the lakes through the atmosphere from sources outside the Great Lakes basin, some enter through rivers and streams, and some come from local air polution. The fate of these substances, once in the lake, is exceedingly complicated. For example, dredging of harbors and waterways may mobilize such substances from the bottom sediments and put them back into the water and the ecosystem. All of these problems require sophisticated and continuing research if solutions are to be found and if lakes are to be managed on a rational basis.

The research capacity to deal with the toxic contaminants problem as well as fisheries, coastal resources enhancement and other vital Great Lakes issues exists today.

The Great Lakes Sea Grant programs have mobilized university scientists to attack these problems. The government laboratories of EPA, NOAA and the Fish and Wildlife Service have a research capability to address these problems. In addition the EPA laboratories with the help of state agencies and universities have the capacity to maintain the surveillance of the lakes, both in terms of nutrients and of toxic substances.

In the past year many of us in the research community have become increasingly concerned, indeed alarmed, with the reductions in federal support for these programs. In FY 1982 we saw the proposed budget for Great Lakes research decrease from about $20 million to about $5 million. Not all of the proposed reductions have occurred, but some have and the final word on others is not yet known.

Proposed reductions for FY 1983 go even further. If all these reductions were to occur the Great Lakes would be left with only the Fish and Wildlife Great Lakes Laboratory and an emasculated EPA Grosse Isle Laboratory. Gone would be Sea Grant, the Coastal Management Program, NOAA's Great Lakes Environmental Research Laboratory, Argonne Laboratory's Great Lakes Program, and a number of smaller programs. In contrast the Canadian federal government plans to continue its Great Lakes research and surveillance program at an annual level of $12.5 million not counting additional substantial funding from provincial and local sources.

Clearly the U.S. Great Lakes research and surveillance program is in a crisis. Cutbacks of the sort that have been proposed, even if they last for only two or three years, will negate the progress that has been made and leave untouched the serious new problems besetting the lakes. They will also result in a loss of research capacity, both in the universities and in government laboratories. This capacity will take decades to replace and perhaps will never be replaced.

For example, could another program like Sea Grant be created today or in the next decade if we lose the present Sea Grant program? I doubt it. Even if the federal government were to enact and fund such a program, its success would be in serious doubt. Universities are in a time of retrenchment and the non-federal commitment required for such a program is unlikely to be forthcoming in the foreseeable future. The chancellor of my own university, Dr. Irving Shain, recently remarked to me that the University of Wisconsin could not today undertake a new program like Sea Grant. And I am sure that other universities would say the same thing.

The Great Lakes Protection Act, H.R. 3600 calls for recommendations for the improvement and increased coordination of research efforts in the Great Lakes. There is no doubt that Great Lakes research would benefit from greater cooperation among the research organizations of the region. I strongly support your efforts in this bill to improve such cooperation.

There is already a great deal more research cooperation than there was a decade ago. The five Great Lakes Sea Grant Programs have formed a network to work together on Great Lakes issues. For the past four or five years we have undertaken many cooperative programs.

Great Lakes Sea Grant personnel meet together frequently. Recently, the directors met with the director of the Great Lakes Environmental Research Laboratory to explore ways to extend this cooperation to include that laboratory. In Wisconsin our Sea Grant Grant Program has joint Great Lakes programs with the U.S. Fish and Wildlife Service Cooperative Fisheries Unit and with the Universities of Michigan and Minnesota.

A good deal of U.S.-Canadian cooperation also exists, particularly at the scientist to scientist level. For example, the Great Lakes Ecosystem Rehabilitation and Restoration program (GLERR) has undertaken two pilot programs, one in Green Bay, Lake Michigan and the other in the Bay of Quinte, Lake Ontario to develop management plans to rehabilitate the ecosystem of these two lake systems. In addition the Science Advisory Board of the

International Joint Commission conducts studies and assessments of Great Lakes problems and research on an international basis. The Great Lakes Fisheries Commission has made significant progress in coordinating the management of Great Lakes fisheries among the eight tates, province of Ontario, and the U.S. and Canadian Federal government. All of these activities depend ultimately on sound, ongoing research programs in both nations.

Such cooperation needs to be extended to the entire U.S. Great Lakes research community, both universities and government laboratories. Not only must we agree on the issues and problems to be addressed, we must also plan our programs in such a way that all the gaps are filled, and we must avoid wasteful duplication of effort. Effective cooperation will require the efforts of the entire research community, universities and government alike.

In this regard I believe the Great Lakes Protection Act, H.R. 3600, would be greatly strengthened by the explicit recognition of universities and Sea Grant College Programs as major participants in the U.S. Great Lakes research program. These organizations should also be recognized as appropriate participants in the effort to achieve broader and more effective cooperation and to develop mechanisms for joint programming.

In summary, Mr. Chairman, I support the research cooperation goals of your efforts. I appreciate the continuing efforts of your committee and of the Congress to prevent a major retreat from the Great Lakes research program so vital to maintaining the valuable, and irreplaceable, resources of our inland seas.

Thank you.

Mr. BLANCHARD. Thank you.

Ms. Botts, I know you are especially concerned, as I understand it, that the National Ocean Pollution Planning Act, and the prior plan prepared pursuant to that act, did not pay sufficient attention to the Great Lakes. Is that correct?

Ms. BOTTS. Yes. When NOAA began to develop the first of the 5-year research plans that were required under that law, it was very dismaying to find out how little knowledge NOAA had in Washington, apparently, about the Great Lakes, and to find that initially, for instance, they didn't even know there was an international joint agreement with Canada.

Later, when we saw the first-draft version of the 5-year plan, it did not deal with toxic substances in the Great Lakes, which at that time and to this day is still considered to be the most serious, not the only, but the most serious problem confronting the Great Lakes.

The plan was modified, but only after considerable effort was made by Great Lakes interests, including myself, to call attention to this—it could scarcely be called an oversight—but major failure in the plan. We have had similar experiences with almost every agency and program.

When the Coastal Zone Management Act was passed in 1973, we found that there was little knowledge or attention to the different sorts of coastal zone management issues in the Great Lakes. Over time, the Great Lakes States organized themselves and, in the end, we were able to get attention to those problems.

In my testimony I talk about the fact that in 1978 EPA leaders held up the signing of the second water quality agreement for several months.

Over and over again we have had this experience: that in Washington the Great Lakes as a resource is not appreciated, the Great Lakes problems are not understood, and there has been a failure to address those problems through decisions made in Washington.

Mr. BLANCHARD. So I take it you would suggest that if we are going to create a Great Lakes Research Office, that it be located outside of Washington. Is that your position?

Ms. BOTTS. I consider it essential that the management be undertaken at the regional level.

Mr. BLANCHARD. I can remember some of our disagreements these last few years with EPA. That is one reason why—in H.R. 3600—the Great Lakes Research Office is put in NOAA.

Ms. BOTTS. I would point out that in 1975, under a Republican administration, the EPA did create a Great Lakes National Program Office. It was the only national program of EPA that was to be managed from the regional level. But we then had the experience that as we got new leadership in Washington for EPA, we had to educate them all over again.

This problem has not been a partisan problem. It has taken place under both Democratic and Republican administrations, and I don't think it should be allowed to be considered a partisan problem. It is not. It is a problem of appreciation for the resource.

Mr. BLANCHARD. I am curious as to what either one of you feels we can do to give the Great Lakes better treatment under the National Ocean Pollution Planning Act. You, Lee, have stated in your testimony that they are not now given that. Do you agree, Dr. Ragotzkie?

Dr. **Ragotzkie**. I think Lee Botts has certainly outlined what happened, and we are very, very concerned. The Great Lakes have not been recognized as being different. They are different in several ways and that is why we have these problems. They are different because they are fresh water, for one. They are different because they are closed bodies; they are not open like the oceans. And they are different because we drink them.

That makes the problems quite different from the ocean. There are a lot of other things, too.

Ms. **Botts**. I would like to point out that Dr. Ragotzkie has some relationship with NOAA. It is very hard for someone who is in an agency to comment on the leadership of the agency. I don't have any territory to protect any more as far as the Great Lakes is concerned.

In answer to your question about the Ocean Pollution Planning Act, it would be conceivable to me to create a section of the Ocean Pollution Planning Act that would treat the Great Lakes differently from the oceans. It is a point that I was trying to make earlier: That the Great Lakes in magnitude are comparable to the oceans in some respects, but they are so different that to lump them together and to require that ocean scientists develop a 5-year research plan for the Great Lakes has not worked satisfactorily from the Great Lakes perspective.

If you wanted to set up a separate but equal management system for the Great Lakes, that would be satisfactory, I think.

Dr. **Ragotzkie**. I must defend myself, Lee. I am not a member of NOAA, nor do I work for them. I work at the University of Wisconsin. I am a professor there, period.

Ms. **Botts**. The Sea Grant Program has some research there.

Dr. **Ragotzkie**. I am the director of the Wisconsin Sea Grant Program which is jointly supported by NOAA and the University of Wisconsin. My salary comes from and is guaranteed by the University of Wisconsin.

Ms. **Botts**. Good.

Dr. **Ragotzkie**. I have been working on the Great Lakes long before Sea Grant existed.

Ms. **Botts**. I am glad you don't defend NOAA.

Dr. **Ragotzkie**. I think it is very difficult to deal with your question, however, because in one sense we want to be different and in the other sense the Great Lakes are a national resource and have to be dealt with under national programs in many cases.

However, the coordination of the research and the design of the research needs to be done by people who are in that region and doing that work. It shouldn't be done by oceanographers any more than North Atlantic oceanography ought to be designed by the Great Lakes research community.

So there needs to be in-region coordination and that is the trick we have to pull off. I am just asking that the university resources be recognized as part of that family, and I think it is not going to work with just a bunch of Government labs coming together and deciding what is to be done next year when literally half of the research going on is going on in the universities. We have to be included, we have to have input. We don't have to run it; we just want to play a part.

Mr. Blanchard. You are probably correct that we should spell it out in the legislation. When we talk about the different facilities that do Great Lakes research we usually mean universities, usually with some amount of Federal money.

Looking ahead, what kind of information is going to be needed to protect the Great Lakes in the future? What kind of research needs are we going to have?

Dr. Ragotzkie. The best way to answer that quickly is to look at two recent problems, Mirex and PCBs, both of which you have heard about, both of which were discovered not because people went out to look for them but quite accidentally by people doing research on something else. PCBs were discovered because they were thought to be an anomaly in DDT analyses until a smart chemist discovered that they weren't. Mirex was thought to be in the PCB family until somebody got smart enough in the research community to discover that they weren't.

The research doesn't always go in the directions you point it. We are going to have new substances appear in the Great Lakes, there is no question about it, and we won't see them, if we don't look for them. If we don't find them we are going to endanger the ecosystem, and we are going to endanger human health in the region.

So research has to be continued on what is going in the lakes. Research has to continue on what happens to these substances once they get in the lakes. That is an unsolved problem at the present time.

Finally, we are almost totally ignorant of the effects of these known substances with known toxic effects and known carcinogenic effects, on the aquatic ecosystem. We do know that lake trout don't reproduce in Lake Michigan any more. We don't know why. We don't know the effects on humans of eating fish with these contaminants in them. We are worried about that. True, no one has died. But it may be a chronic effect. We don't know, and it needs to be studied.

These are some of the things we need to know, and as I said, a lot of people drink this water. We have got to maintain surveillance.

Ms. Botts. One of the issues that has not been referred to today is the growing recognition that a great deal of the pollutant load of the Great Lakes comes through the atmosphere. The atmosphere in many places, appears to be, based on the research, the chief source of the toxic chemicals. Scientists estimate that overall about a fourth to a fifth of the total pollutant load, all kinds of pollutants to the Great Lakes, get there through the air.

So when we refer to the ecosystem, when we refer to the need to understand the whole system, we are talking about the relationship between air quality and water quality as well. We are just beginning to understand. We really didn't know until the early 1970's how much of the pollution of the Great Lakes did get into the lakes through the air. It was not until we had made so much progress in building sewage treatment plants and industry had gone so far in controlling its pollution that we realized that we had this other major source to deal with.

So we know the problem is there, but we don't know what to do about it as yet. And that, of course, is what research is all about.

Mr. **Blanchard**. So you haven't determined with any great precision the points of origin of the atmospheric pollutants.

Ms. **Botts**. It appears to be many diffuse sources. The Clean Air Act as it is presently structured does not allow or it is not structured in a way to deal with long-range transport of pollutants. But we don't know enough to propose how to change the Clean Air Act to deal with it.

If someone were to give us an opportunity to say "What should we do legislatively?" I don't believe there is anyone who would feel competent to do that now.

Mr. **Blanchard**. Then I guess it is safe to say that merely because we live in a modern, highly technical society that is changing rapidly, the research needs will be significant.

I take it, obviously, then, if we can get coordination that is all the better, but it sounds from your testimony as if it is most important to keep research going before we worry too much about coordinating it.

Is that a fair characterization of your testimony?

Ms. **Botts**. Yes.

Dr. **Ragotzkie**. Yes; I think so, although cooperation and coordination—and they are two different things, incidentally; you coordinate us, but we cooperate amongst ourselves—go hand in hand with more effective research. So the fight against the budget problems and the cooperation and coordination are totally linked. We have to get more for the dollar. We have to do a better job. But we have to have the dollar.

Mr. **Blanchard**. We will be interested in your thoughts on how we perhaps can tighten this legislation before we report it out. There is enough support for it that we will be reporting it out. We want to make sure your suggestions are received.

I have a question regarding the budget cuts which we will be concerned with and will try to restore.

What do you think will be the impact of these proposed budget cuts on the United States-Canadian relationship with regard to the Great Lakes?

Ms. **Botts**. In my judgment, the trust in the United States by Canada has already been seriously undermined by what seems to be vacillation and a willingness to walk away from the commitments that we have made under the Water Quality Agreement.

The pollution load to the Great Lakes comes disproportionately from the United States side. We have a lot more people living in the Great Lakes region. We have a lot more industry. I can't speak for Canadian interests, but I wouldn't blame Canadians if they tended to feel somewhat victimized by the United States, which creates more of the problem and then is willing to do less toward trying to solve the problem.

Dr. **Ragotzkie**. I only know what I hear from my Canadian friends, my scientific friends, and there is, of course, great concern not only from a professional research point of view of the loss of science capacity on this side, but concern about the lakes themselves.

They are asking questions: Are we going to maintain surveillance? Are we going to maintain compliance on the U.S. side, compliance with standards, and so on? So there is a lot of concern. There is a good deal of tension that has built up. On a scientist-to-scientist basis, the cooperation goes on. Budget cuts do not affect that. But the worry is there.

Mr. **Blanchard**. With that, we thank you for your time and your testimony and look forward to working with you on this matter and related matters. Thank you.

The subcommittee stands in recess.

[Whereupon, the subcommittee recessed from 3:50 p.m. to 3:58 p.m.]

Mr. **Blanchard**. The subcommittee will be back in session.

Before we proceed, I should mention that members of the committee may have questions they would like to submit in writing, and if all of you would be so kind, I don't think there will be too many, we would appreciate it if you would be able to answer those.

Now, without further adieu, I would like to call our next witness, Dr. Dail Brown, who is the Director of the National Marine Pollution Program Office at the National Oceanic and Atmospheric Administration.

We thank you for your patience in being on hand, Dr. Brown, and we note also that you are accompanied by your son, Dail, Jr. Welcome.

STATEMENT OF DR. DAIL BROWN, DIRECTOR, NATIONAL MARINE POLLUTION PROGRAM OFFICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, ACCOMPANIED BY ANDREW ROBERTSON, DIRECTOR, OFFICE OF MARINE POLLUTION ASSESSMENT, NOAA

Dr. **Brown**. He is here to get his civics lesson.

Mr. **Blanchard**. I have a son about the same age.

I understand you are a native of Ohio, you have a Ph. D. in biological oceanography from the University of California, that you worked with the Smithsonian Institution, and have been with NOAA for 10 years. We welcome you and you may proceed as you so choose, either to summarize or read your testimony. But we thank you for being on hand.

Dr. **Brown**. Thank you, Mr. Blanchard. I will summarize my statement.

I want to thank you for the opportunity to come here and discuss the National Ocean Pollution Planning Act and the efforts that we have made to provide greater coordination in marine pollution research by the Federal Government.

The National Marine Pollution Program Office, of which I am director, is responsible for preparing the 5-year Federal Plan for ocean pollution research, development and monitoring, and for overseeing its implementation.

With me today is Dr. Andrew Robertson, who is Deputy Director of NOAA's Office of Marine Pollution Assessment. This office has the leadership responsibility within NOAA for coordinating NOAA's program in marine pollution activities.

I will also summarize the views of the Department of Commerce concerning H.R. 3600, which would amend the National Ocean Pollution Planning Act.

The administration supports the reauthorization of the National Ocean Pollution Planning Act. However, the administration opposes the enactment of H.R. 3600. While we support the overall objectives of the proposed amendment, we believe that the existing statute, as written and as applied, has adequate procedures to coordinate Great Lakes research activities and to identify priority areas for Great Lakes research.

Let me review first our progress to date in implementing the National Ocean Pollution Planning Act, which I believe justifies its reauthorization and also demonstrates that the statute provides the desired protection for the Great Lakes sought by H.R. 3600.

The National Ocean Pollution Planning Act calls for the establishment of a comprehensive, coordinated and effective Federal program in research, development, and monitoring of the pollution of the marine environment, including the Great Lakes. The act directs the Administrator of NOAA, in consultation with the Director of the Office of Science and Technology Policy and other Federal officials, first to prepare and update biennally a 5-year plan; second, to provide financial assistance; third, to prepare a detailed inventory of existing Federal programs; fourth, to analyze how the programs meet the priorities; fifth, to recommend changes in the overall Federal effort when necessary; and finally, to insure that the results and findings and information regarding Federal programs are disseminated in a timely manner and in a useful form to Federal and non-Federal user groups that have an interest in such information.

To carry out the purposes of the Act, an interagency committee was chartered within the Office of the President's Science Adviser. The Interagency Committee on Ocean Pollution Research, Development and Monitoring is chaired by the NOAA Deputy Administrator and is composed of senior representatives from 11 departments and independent agencies. Its mission is to identify priorities and gaps, to promote cooperative research and studies, and to provide an external evaluation of projects and programs.

The first Federal plan was compiled in the fall of 1979. Nearly 1,000 Federal projects were identified, totaling approximately $165 million in fiscal year 1978. A revision of this plan has just been completed, and prepublication copies have been provided to this committee.

This second plan indicates that approximately $171 million is devoted to marine pollution research activities in fiscal year 1981. The plan reviews the ocean-use activities that may contribute to marine pollution, summarizes our current levels of effort, and identifies future needs.

A summary of the major issue areas is attached to my testimony and covers such activities as marine waste disposal, marine mining, energy, transportation, accidental discharges, and coastal land use.

Let me note two areas that are highlighted in the plan as priority recommendations for action: First, a partial redirection in our efforts away from prelease baseline studies toward long-term postlease monitoring and assessment related to OCS development. Efforts are currently under way to develop a multi-year study to implement this recommendation.

Second, a better integration of our efforts to assess the potential environmental impacts of various waste disposal options in various media such as the land, oceans, and atmosphere. A number of recent studies have indicated that multi-media waste management strategies are necessary to determine the waste disposal option that best balances economic cost and environmental risk.

Section 5 of the act directs NOAA to establish a comprehensive ocean pollution research, development, and monitoring program. We are doing this, and the administrator of NOAA just recently announced a reorganization which will create a new National Ocean Service. Both my office and the Office of Marine Pollution Assessment will be part of that new group, and we see this as an opportunity to come up with a more effective and efficient marine pollution program.

Under section 6 we are providing financial assistance to address critical problem areas.

Under section 8 we are taking steps to greatly improve the availability of marine pollution data and information to users and Government agencies and the private sector.

My written statement expands on these activities.

I would now like to address H.R. 3600, which the administration believes is unnecessary.

Under the National Ocean Pollution Planning Act the Great Lakes system already has co-equal status with the Pacific, Atlantic, Alaskan, and Gulf Coast of the United States. The research needs and priorities of the Great Lakes are specifically addressed in the 5-year plan developed pursuant to that act.

While much work remains to be done in order to achieve the goals set forth in the act, the Great Lakes research sponsored by the Federal Government is coordinated to the same extent that research is coordinated in any other U.S. coastal region. The act is national in scope, with no special treatment given to any particular coastal area.

I would like to now highlight several steps that were taken during the planning process for this second 5-year plan to identify ongoing research activities and specific regional concerns of the Great Lakes area.

My office sponsored a conference in Traverse City, Mich., in June 1980 to identify pollution problems and concerns related to the Great Lakes and to provide an indication of general priorities as to where participants felt research emphasis should be placed. This conference was hosted by the Michigan sea grant college program and involved participants from State and local governments, universities, industry, public-interest groups, and regional offices of the Federal agencies involved.

Major regional concerns covered such problem areas as toxic contaminants, eutrophication, habitat modification, accidental discharge of hazardous materials, analyses of environmental risk, and jurisdictional overlaps.

NOAA also sponsored a workshop in Ann Arbor, Mich., in February 1981 to address pollution monitoring needs in the Great Lakes. The workshop addressed such broad objectives concerning the development of guidelines, strategies and approaches for interrelating operational pollution monitoring programs in the Great Lakes, and for improving their effectiveness.

In addition, catalogs of both Federal and nonfederally funded research, development and monitoring activities have been prepared, and those pertaining to the Great Lakes are specifically identified. Copies of all of these reports have been provided to this committee.

Finally, the next 5-year plan, of which you have copies, identifies the major problem areas representing the most significant pollution issues in the Great Lakes as identified by the constituents in the region themselves.

Specifically, the new plan discusses the research and other needs in the Great Lakes program related to contaminants and toxics, eutrophication, habitat modification, social, economic and institutional considerations, major discharges, and risk analysis. Thus, as part of our national planning effort, we have prepared reports on the Great Lakes research and identified the priorities as they are related to these reports.

We also believe that the Great Lakes environmental impact analysis which would be required by the new section 203 is unnecessary. The National Environmental Policy Act already requires the type of analysis that would be required by this section for every report or recommendation for legislation or any other major Federal action significantly affecting the human environment.

The NEPA process assures that these major actions will not be undertaken without a detailed review of environmental impacts of the proposed action, and such review must address regional concerns and costs.

In summary, the existing legislation provides an adequate mechanism for accomplishing the improved coordination of Great Lakes pollution research sought by H.R. 3600. As I noted earlier, the identification of regional and local pollution concerns are part of the planning process of building a framework of national concerns and priorities.

The information on Federal and non-Federal program activities has been gathered at the regional level and is updated when necessary. To the extent that funding is available, my office will be working to improve program coordination and information transfer among all interested groups at the regional level. The Great Lakes region will certainly receive our attention with the combined efforts of all at the Federal, State, and local level.

Our experiences over the past several years have demonstrated that the National Ocean Pollution Planning Act is a very effective framework. For this reason, the administration supports a 2-year reauthorization of the National Ocean Pollution Planning Act at a level of $3 million in fiscal year 1983, and such sums as may be necessary for fiscal year 1984. We believe, however, that H.R. 3600 is unnecessary.

This concludes my statement, and I will be happy to answer your questions.

[Dr. Brown's prepared statement follows:]

TESTIMONY OF
DR. DAIL W. BROWN
DIRECTOR, NATIONAL MARINE POLLUTION PROGRAM OFFICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
before
SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURAL RESEARCH, AND ENVIRONMENT
March 9, 1982

Mr. Chairman and Members of the Subcommittee, thank you for providing me the opportunity to discuss the National Ocean Pollution Planning Act of 1978 and efforts to provide greater coordination of marine pollution research by the Federal Government. The National Marine Pollution Program Office of which I am Director is responsible for preparing the 5-year Federal Plan for Ocean Pollution Research, Development, and Monitoring and overseeing its implementation. With me is Dr. Andrew Robertson, deputy director of NOAA's Office of Marine Pollution Assessment (OMPA). This office has leadership responsibility within NOAA to coordinate marine pollution activities. I will also present the views of the Department of Commerce concerning H.R. 3600, a bill designed to amend the National Ocean Pollution Planning Act to provide greater coordination of research efforts on the Great Lakes.

The Administration supports the reauthorization of the National Ocean Pollution Planning Act. However, we oppose enactment of H.R. 3600. We believe that the existing statute, as written and as applied, has adequate procedures to coordinate Great Lakes research activity and identify priority areas for Great Lakes research. The Federal Pollution Plan identifies the regional concerns, the effects of not just Federal but also state and private actions on the Great Lakes, and sets those concerns and effects into the Federal Plan and the national perspective.

Let me first review our progress to date in implementing the National Ocean Pollution Planning Act which, I believe, justifies its reauthorization and also demonstrates that the statute provides the desired protection to the Great Lakes sought in H.R. 3600.

The National Ocean Pollution Planning Act of 1978, P.L. 95-273, calls for the establishment of a comprehensive, coordinated, and effective Federal program of research, development, and monitoring of pollution of the marine environment including the Great Lakes. This Act directs the Administrator of NOAA, in consultation with the Director of the Office of Science and Technology Policy and other Federal officials:

1. To prepare and update biennially a comprehensive five-year plan for the overall Federal effort in ocean pollution research and development and monitoring.
2. To provide financial assistance for research and development, monitoring projects, or activities which are needed to meet priorities of the five-year plan if these are not being adequately addressed by any Federal department, agency or instrumentality.
3. To prepare a detailed inventory of existing Federal programs.
4. To make an analysis of the extent to which existing programs assist in meeting priorities.
5. To make recommendations for changes in the overall Federal effort where necessary.
6. To ensure that the results, findings and information regarding Federal ocean pollution research and development and monitoring programs be disseminated in a timely manner and useful form to Federal and non-Federal user groups having an interest in such information.

The Act also directs NOAA itself to internally establish a comprehensive, coordinated and effective ocean pollution research, development, and monitoring program. To carry out the purposes of the Act, an interagency committee was chartered within the Office of the President's Science Advisor. The Interagency Committee on Ocean Pollution Research, Development, and Monitoring is chaired by NOAA's Deputy Administrator and is composed of senior representatives from eleven departments and independent agencies. Its mission is to identify priorities, gaps, to promote cooperative research and studies and provide external evaluation of projects and programs. The committee also seeks to avoid unnecessary duplication among Federal agencies and seeks better planning and more effective use of available funds, personnel, vessels, facilities, and equipment.

NOAA established the National Marine Pollution Program Office--called NMPPO--to provide a national focal point for coordinating Federal efforts on a day-to-day basis. That office is located in NOAA's Office of Policy and Planning and is responsible for updating the five-year plan and coordinating the implementation of the recommendations of the Plan. As I mentioned, NOAA's Office of Marine Pollution Assessment (OMPA) has the overall responsibility for coordinating the agency's marine pollution research, development, and monitoring activities.

Recently the Administrator of NOAA proposed organizational changes that will allow NOAA to maintain or improve services, reflect budget priorities, improve internal and external communications, and reduce administrative overhead. A major aspect of this reorganization is the establishment of a new main line component called the National Ocean Service. This office will provide a focus for the development of a comprehensive strategy within NOAA that will address the increasing uses and opportunities of the oceans. The office will group most of NOAA's ocean-related activities such as mapping, charting, geodesy, marine pollution, ocean mining and energy, and coastal management responsibilities. Not included are those activities dealing with living marine resources carried out by the National Marine Fisheries Service. Both NMPPO and OMPA will be part of the new National Ocean Service which will provide an opportunity to improve the efficiency and effectiveness of our marine pollution research activities. The exact details of the new organization are still to be worked out.

The first five-year Plan was completed in the fall of 1979. Nearly 1,000 Federal projects were identified totaling approximately $165 million in FY 1978. A revision of this Plan has been completed and pre-publication copies have been provided to this committee. This plan indicates approximately $171 million devoted to marine pollution research activities in FY 1981. The Plan reviews the ocean use activities that may contribute to marine pollution, summarizes our current level of effort, and identifies future needs. A summary of the major issue areas is attached to my testimony and covers such activities as marine waste disposal, marine mining, energy, transportation, accidental spills, and coastal land use. Let me note two areas that are highlighted in the plan as priority recommendations for action:

o A partial redirection of our efforts away from prelease baseline studies toward long-term post-lease monitoring and assessment to understand better the long-term environmental impacts of OCS development. Efforts are currently underway to design a multiyear study to implement this recommendation.

- A better integration of our efforts to assess the potential environmental impacts of various waste disposal options in different media such as land, oceans, and atmosphere. A number of recent studies have indicated that multimedium waste management strategies are necessary to determine the waste disposal option that best balances economic costs and environmental risk.

Section 5 of the Act directs NOAA to establish a comprehensive ocean pollution research, development and monitoring program. In developing the program, NOAA considers resources and activities associated with:

- The Ocean Pollution Planning Act itself, specifically those activities involving financial assistance for research addressing priority needs in marine pollution, and for dissemination of information;
- Title II of the Marine Protection, Research, and Sanctuaries Act of 1972, including ocean dumping investigations, research into the long range effects of marine pollution, together with regional marine ecosystem investigations and research into the effects of accidental discharge; and
- Research activities associated with other NOAA programs, including habitat investigations, research into pollutants such as microconstituents in fishery products, Great Lakes research, Sea Grant, OTEC and deep seabed mining.

In fiscal year 1981, over $25 million of NOAA's appropriation was devoted to the marine pollution program. These funds include $3 million for activities under sections 4, 6, and 8 of the National Ocean Pollution Planning Act, over $13 million for title II and related activities, and approximately $9 million for the marine pollution-relevant activities from within other NOAA programs.

NOAA has identified six agency goals responsive to the Act and to national needs:

1. To help guide national policy decisions on marine pollution issues based upon scientific information.
2. To provide leadership in planning and coordinating marine pollution research, development, and monitoring activities; in preparing and synthesizing results from such activities; and in disseminating information in a timely manner and useful formats to all relevant users.
3. To develop sufficient understanding of marine ecosystems to provide a sound evaluation of the impacts of the use of the marine environment as a source of renewable and non-renewable resources.
4. To support efforts to prevent, or mitigate the effects of accidental releases of oil and hazardous materials into the marine environment.
5. To protect the integrity, productivity, and aesthetic quality of the marine system from unacceptable ocean use practices and to enhance already degraded systems by recommendation of possible actions leading to mitigation and/or restoration.
6. To document and evaluate the status and trends of source loadings, ambient levels, and biological accumulations of critical pollutants and the probable effects of these pollutants on the ecosystem and on human welfare.

The strategy for marine pollution research starts with the issue identification. The most pressing marine pollution issues facing the nation at the pressent time and those that are judged likely to become pressing within the coming decade are identified. These issues are analyzed to determine what types of scientific information are required to help decision-makers. Scientific studies to obtain this information are then defined and carried out. The results of these studies are brought together and synthesis reports are produced that analyze and provide the information in a form suitable for management needs.

The basis of this strategy is an ocean-use model. This model: 1) links man's ocean-use activities with environmental and ecological consequences through understanding of environmental and ecological processes; 2) balances among sociological and economic considerations and environmental and ecologic consequences; and 3) assists management to varify or refute the effectiveness of regulatory or corrective processes. Through this model, scientific information and assessments are provided at all decison levels of ocean-use management.

The focus of NOAA's program is on the following issues:

- Anticipated requests to increase, possibly by orders of magnitude, ocean waste disposal over the coming decade.
- The need to dispose of increased quantities of ash resulting from our nation's increased use of coal.
- Increased dredging for deep water ports to meet the need for accommodating deeper draft vessels.
- Increased additions of nutrients from agricultural runoff and effluent discharges.
- Pathways, fates, and rates of removal of toxic organic substances in Great Lakes and marine coastal ecosystems.

As specified under section 6 of the Act, the financial assistance program is conducted through grants and contracts that are administered jointly with our other programs under the Marine Protection, Research, and Sanctuaries Act in order to achieve greater coordination and balance in our overall marine pollution program. Section 8 of the National Ocean Pollution Planning Act calls upon the Administrator of NOAA to assure that the results and findings of ocean pollution research be disseminated to all interested parties in a timely manner and in useful forms. We are taking steps to greatly improve the availability of marine pollution data and information to users in government agencies and the private sector.

I would like to now turn to our efforts to coordinate Great Lakes and to discuss H.R. 3600.

Section 202 of the proposed amended Act would establish a Great Lakes Research Office to be directed by an Executive Director with responsibility for preparing reports to the Congress and the President on the status of Federal research in the Great Lakes and on the degree of coordination among Great Lakes States in efforts to protect the environmental quality of the Great Lakes.

The new Section 203 would require each Federal agency to include in every recommendation for legislation or other major Federal action significantly affecting the Great Lakes a detailed written analysis similar to an environmental impact statement. The Executive Director of the Great Lakes Research Office would make determinations on significance in consultation with appropriate Federal, state and local officials. Finally, H.R. 3600 would require that $750,000 of the funds appropriated for the Act after FY 1981 shall be obligated and expended each fiscal year on the Great Lakes Research Office.

I believe H.R. 3600 is unnecessary. Under the National Ocean Pollution Planning Act, the Great Lakes system already has co-equal status with the Pacific, Atlantic, Alaska, and Gulf coasts of the United States. The Act defines the term "marine environment" to include the "coastal zone" as defined in the Coastal Zone Management Act, and that definition includes the Great Lakes. The research needs and priorities of the Great Lakes are specifically addressed in the Federal 5-year plan developed pursuant to the Act. While much work remains to be done in order to achieve the goals set forth in the Act, Great Lakes research sponsored by the Federal Government is coordinated to the same extent as research in any other U.S. coastal region. The Act is national in scope with no special treatment given to a particular coastal region. As explained, coordination of Federally sponsored pollution research in the Great Lakes is now the responsibility of the Interagency Committee on Ocean Pollution Research, Development, and Monitoring acting through its staff office, NMPPO in the National Oceanic and Atmospheric Administration of this Department. There is no evidence to show that this existing institutional framework is not able to deal with the problems in the Great Lakes.

I would like to highlight several steps that were taken during the planning process for this second five-year Plan to identify ongoing research activities and specific regional concerns of the Great Lakes area:

1. NMPPO sponsored a conference in Traverse City, Michigan, June 9-11, 1980, to identify pollution problems and concerns related to the Great Lakes and to provide an indication of general priorities as to where participants felt research emphasis should be placed. This Conference was hosted by the Michigan Sea Grant College Program and involved participants from state and local governments, universities, industry, public interest groups, and

regional offices of Federal agencies. Major regional concerns covered such problem areas as toxic contaminants, eutrophication, habitat modification, accidental discharge of hazardous materials, analysis of environmental risks, and jurisdictional overlaps. Copies of the Conference proceedings have been provided to this Subcommittee.

2. NOAA sponsored a workshop in Ann Arbor, Michigan, on February 11-13, 1981, to address pollution monitoring needs in the Great Lakes. The workshop addressed broad objectives concerning the development of guidelines, strategies, and approaches for interrelating operational pollution monitoring programs in The Great Lakes and for improving effectiveness. Copies of the results of this workshop have also been made available to you.

3. Catalogues of both Federal and non-Federal funded research, development, and monitoring activities have been prepared and those pertaining to the Great Lakes were specifically identified. Copies have also been made available to this Subcommittee.

4. Finally, the proposed 1982 revision to the five-year plan identifies the major problem areas, representing the most significant pollution issues in the Great Lakes. Specifically, the new plan discussed the research and other needs in the Great Lakes program relative to —

1. Contaminants and toxics
2. Eutrophication
3. Habitat modification
4. Social, economic and institution considerations
5. Major discharges
6. Risk analysis

Thus, as part of our national planning efforts, we have prepared reports on Great Lakes research and identified the priorities as they related to these reports.

We also believe that the Great Lakes environmental impact analysis which would be required by the new section 203 is unnecessary. The National Environmental Policy Act (NEPA) already requires the type of analysis that would be required by this section for every report or recommendation for legislation or other major Federal action significantly affecting the quality of the human environment. The NEPA process assures that these major actions will not be under taken without a detailed review of environmental impacts of the proposed action and such review must address regional concerns and costs.

In summary, the existing legislation provides adequate mechanisms for accomplishing the improved coordination of Great Lakes pollution research sought by H.R. 3600. As I noted earlier, the identification of regional and local pollution concerns are a part of the planning process of building a framework of national concerns and priorities. Information on Federal and non-Federal program activities has been gathered at the regional level and will be updated as necessary. To the extent that funding is available, NMPPO will be working to improve program coordination and information transfer among all interested groups at the regional level. The Great Lakes Region will certainly receive our attention. We recognize the importance of the Great Lakes must be preserved. This requires the combined efforts of all at the Federal, state and local levels.

In summary, our experiences over the past several years have demonstrated that the National Ocean Pollution Planning Act provides a very effective framework for identifying important marine pollution problems, coordinating the Federal research, development, and monitoring response, and facilitating wise ocean use. For this reason the Administration supports a two-year reauthorization of the National Ocean Pollution Planning Act at a level of $3 million in fiscal year 1983 and such sums as may be necessary for fiscal year 1984. We believe, however, that H.R. 3600 is unnecessary.

This concludes my testimony. I will be happy to answer any questions.

Attachment to the Testimony of Dr. Dail W. Brown

MARINE POLLUTION ISSUES

1. MARINE WASTE DISPOSAL — One of the growing problems of our society is the disposal of waste materials created in large urban and industrial centers. The waste materials of concern include:

   a. Sewage: The principal concerns with sewage disposal are human health risks caused by the direct transmission of human pathogens and the contamination of seafoods by toxic metals, synthetic organic compounds, and pathogens.

   b. Dredged Material: It is necessary to maintain exisitng channels and to dredge new channels leading to our port facilities to maintain safety and to expand the capability to handle larger ships. Although the bulk of the dredged material is innocuous, in many highly polluted areas it contains harmful chemical constituents.

   c. Industrial Waste: Industrial wastes often contain harmful constituents. These wastes can impact the marine environment as some are directly ocean dumped or discharged into coastal waters while others indirectly find their way to the marine environment after being disposed of in landfills, by discharge into inland waters, or by incineration.

   d. Radioactive Waste: Exposure to radioactive substances poses environmental problems and threat to human health. Existing regulations prevent the disposal of either high or low level radioactive waste in the oceans. Terrestrial disposal, however, has many undesirable aspects and the option of ocean disposal may well receive increasing attention.

2. MARINE MINING — As our society turns more and more to the sea for certain mineral resources, the potential environmental degradation increases. The following activities are of greatest concern:

   a. Oil and Gas Extraction: The environmental concerns related to oil and gas extraction from the Outer Continental Shelf (OCS) focus on the environmental impact caused by on-shore facilities development, long-term ecological effects of low-levels of petroleum hydrocarbon exposure, and on the effect of spills and blow-outs.

   b. Sand, Gravel, and Shell Mining: All mining of sand, gravel, and shell now underway occurs in shallow coastal areas which are highly productive and which are also subject to impacts from other pollution. Extensive or long-term operations could cause far-reaching effects on productivity of nearshore marine habitats.

   c. Deep-Seabed Mining: Deep-seabed mining involves the recovery of manganese nodules from the sea floor and their processing either at sea or at land-based facilities. It also may include the recovery and processing of polymetallic sulfides. While benthic life is sparce in the deep ocean, the recovery time for such organ;isms is extremely long. Disposal of processing waste from either floating or coastal facilities is also a concern.

3. MARINE ENERGY -- Because of the high costs of imported and domestic oil and gas, alternative energy technologies have received considerable attention in recent years.

   a. Ocean Thermal Energy Conversion (OTEC): The OTEC process utilizes the temperature differential between the warm surface waters and the cold, deep waters. The transportation of a large quantity of the bottom water to the surface will affet biota because of its thermal and chemical qualities. In addition, chemical biocides may be required to prevent biofouling of equipment.

4. MARINE TRANSPORTATION -- Environmental concerns associated with marine transportation involve the environmental implications of routine operational discharges. Effects may be significant in heavily utilized waters with poor circulation.

5. ACCIDENTAL DISCHARGES -- Substantial amounts of oil and hazardous materials enter the marine environment as a result of accidental spills. Although the focus in the past has been on the cleanup and mitigation of spilled oil, the national concern is shifting toward the potential effects from spills of other hazardous materials.

6. COASTAL LAND-USE -- Land use in coastal areas, whether it is agricultural or urban/industrial development, can adversely affect the nearby marine ecosystem. Types of uses that cause pollution concern are the following:

   a. Siting, Construction, and Operation of Coastal Facilities: Ports, power plants, sewage treatment facilities, dumps, refineries, mineral processing plants, seafood and lumber processing plants, and many other industrial activities occur in coastal areas because they are dependent on marine transportation, large volumes of cooling water, living marine resources, or use of the ocean for waste disposal.

   b. Non-Point Source Pollution: Non-point source pollution results from man's modification to the terrestrial environment which subsequently impact the ocean. Pollutants include sediment, pesticides and fertilizers from agricultural areas and debris, oil, grease, and pathogens from urban areas. Non-point sources are major contributors of pollutants to the oceans and are the most difficult to control.

Mr. **Blanchard.** I think we should provide you with a copy of the substitute we plan to offer. We want the EIS to be Great Lakes-sensitive, but we don't have any desire to add additional paperwork. The new section 203 in our substitute—should be reviewed by your office because it meets that objective.

How do you feel about all budget cuts in Great Lakes research efforts? You can't possibly be happy about them.

Dr. **Brown.** Well, I think there are two separate issues: first, the problem of identifying priorities and looking at the proper balance within the issue areas, and second, the availability of resources to address the priority problems. Identifying Marine and Great Lakes pollution problems do not guarantee availability of resources. Pollution and environmental issues must compete against a broad range of social and economic concerns for available resources. As you point out, those decisions are beyond the control of my office and others that are involved directly in the marine pollution program.

We would hope that using the mechanism we have—by improving the coordination under the existing piece of legislation—we can make better use of the dollars that we do have. We think we have a mechanism to do that. We think the second plan has gone a long way over the first plan in laying out that framework, and we feel that we can proceed, not only in the Great Lakes but other regions of the country, in pulling together what resources will be made available over the next several years and hopefully do a good job.

Mr. **Blanchard.** Where are you going to get the research? You are closing the Ann Arbor laboratory. That is your principal lab for the Great Lakes, isn't it? It is being closed. Where are you going to get your information from?

Dr. **Brown.** Perhaps I might ask Dr. Robertson, who is directly involved and is really representing NOAA's Office of Research and Development. There are a number of things that we are looking at, trying to see from which of our other financial assistance programs information might come.

Dr. **Robertson.** To some extent we will be picking up some of the Great Lakes work and my office specifically hopes to continue some Great Lakes work. We have been funding some partially through the Great Lakes Environmental Research Lab, but partially directly ourselves. We do anticipate that some of that will continue.

In this time of financial constraints, you have to go with only the highest priority things. It certainly will be difficult to get all the information we need, but we feel that some things will continue and that there is a great deal of information already available to draw on.

Dr. **Brown.** I think it is also certainly the position of the administration that if these problems are top priority and are considered of a regional, State, and local nature, that the States will move to pick up those programs.

Mr. **Blanchard.** I hate to even react to that because it is nonsense and because I don't think you believe it yourself.

Are you aware that the Canadian Government has sent a memorandum to our State Department regarding these cutbacks and how they might affect the American Government's living up to our water quality agreement with Canada?

Dr. **Brown**. I had some discussions with the gentleman at the Canadian desk at the State Department. He didn't go into any specifics, but I did provide him what information we had on the level of the cuts and our position on H.R. 3600.

Mr. **Blanchard**. You are not aware of the Canadian protest?

Dr. **Brown**. I have not seen the details of the protest.

Mr. **Blanchard**. Do you disagree with the statements of all the earlier witnesses?

Dr. **Brown**. I don't think we disagree with the intent behind the statements made by the previous witnesses. What we do feel is that we have a mechanism that we can use to carry out the intent of H.R. 3600. While we do have some problems with section 203, I have had discussions with some of the staff on some of the possible modifications that we need to look at from an administration position.

I think there is also concern of creating an additional level of bureaucracy. We would like to see us use some of the existing mandates to try to carry out the intent of H.R. 3600.

Mr. **Blanchard**. How about a regional office to do that?

Dr. **Robertson**. I think our feeling is that we have had and do now have existing mechanisms to carry out this coordination need and, in fact, in the past, as I think several of the previous speakers indicated, there has been a good deal of coordination and it has worked reasonably well.

Of course, it is very nice to have a formal structure, but a formal structure doesn't guarantee good coordination. My perception is that the Great Lakes research community has had in most cases quite good coordination in the last few years.

I think there has been a disruption of coordination with the closing of the Great Lakes Basin Commission, which certainly was one of the primary coordinating mechanisms. However, I think the community is moving to fill the gap, and if there is a need then identified, I think they will fill it——

Mr. **Blanchard**. Who is "they"?

Dr. **Robertson**. I am thinking especially of the major decision makers on research funding in the region itself, specifically the directors of the government laboratories up there, and the directors of the sea grant programs, which among themselves really determine the research that is done in the region.

Mr. **Blanchard**. But those programs are being abolished. Those laboratories are being abolished.

Dr. **Robertson**. I was speaking specifically for this year and the mechanisms that are in existence or are developing.

Mr. **Blanchard**. Well, we are back to the old problem that there may be nothing to coordinate.

Dr. **Brown**. Mr. Blanchard, I should point out that Dr. Robertson until recently was the head of the chemistry-biology group of our Great Lakes Environmental Research Lab, so he speaks with some experience in the area.

Mr. **Blanchard**. Well, I appreciate the situation you are in. You are trying to make the best of a difficult situation that everyone faces in Government these days, particularly here in Washington. But you know that the States aren't in any position, particularly the State of Michigan, to pick up the costs of research and laboratories, and yet there is a great need.

How would you characterize the current state of environmental quality of the Great Lakes? Do you think it is getting better, worse, about the same?

Dr. **Robertson**. Now you have my personal opinion. I don't know that our agency has a position on this.

But in terms of eutrophication, I feel the evidence is quite strong that the lakes are improving substantially. Regarding the lakewide problems with eutrophication, we have spent billions of dollars removing phosphorus from sewage, and while there are still some sewage plants that are not operating at the level we would like, I think there is evidence of substantial improvement. Dr. Herdendorf, who is here has had substantial evidence in Lake Erie of a greatly improving trend, I believe.

In terms of the problems of toxic organics, we are at the point of trying to size up what the magnitude of the problem is that we have.

Concerning the problem of DDT, there is certainly evidence of improvement, this is basically because we have banned the use of that substance.

Concerning other organic substances, we don't quite know what their effect is yet, and without that information we have not really taken the steps that may be necessary to control them.

Mr. **Blanchard**. You see a need for continued research, however, I take it, on all these questions?

Dr. **Robertson**. I believe there is a need for some research on the toxic organics problem.

Mr. **Blanchard**. Do you agree with that, Dr. Brown?

Dr. **Brown**. I agree.

Mr. **Blanchard**. Well, let me suggest that we do our best to work with you in developing this legislation in a way in which, assuming we proceed to report it out of committee, it is done in a fashion in which you think it is most workable and effective. We certainly wouldn't want to duplicate anything, although I don't think that is going to be the problem when the budget is brought to final form.

We thank you for your patience and for being here, and thank you for your testimony.

Dr. **Brown**. Thank you.

Dr. **Robertson**. Thank you for your concern for the Great Lakes.

Mr. **Blanchard**. The subcommittee will stand adjourned until further call of the Chair.

[Whereupon, at 4:20 p.m. the subcommittee adjourned, to reconvene at the call of the Chair.]

APPENDIX I

QUESTIONS AND ANSWERS SUBMITTED FOR THE RECORD

QUESTIONS FOR MR. ROBERT MCEWEN

1. Your testimony mentions several responsibilities that the IJC has under the Great Lakes Water Quality Agreement of 1978. In light of the drastic reductions of Federal support for Great Lakes research and programs, I would like your assessment of the impacts these cuts have on:

    A. The ability of the IJC to adequately meet its responsibilities under the agreement. Will the lack of research prevent IJC from making informed decisions?

        1. Will EPA cuts in industrial effluent guideline efforts prevent the U.S. from meeting the Dec. 31, 1983 program deadline?

        2. What effect will the elimination of Great Lakes research funds to EPA's Grosse Ile Laboratory have on continuing efforts to control eutrophication (phosphorus abatement) and toxic substances?

        3. Will cuts in the EPA Region V Great Lakes National Program Office prevent the U.S. from adequately monitoring compliance of pollution control with the agreement?

2. Do you believe there is a need for further coordination of Great Lakes research, development, and planning?

3. Do you feel that the IJC could work effectively with an office such as that proposed in H.R. 3600?

4. Your testimony mentions the need for the United States and Canada to honor their obligations and maintain the necessary resources for protection of the Great Lakes.

    A. Do you feel this commitment exists today?

    B. What recommendations do you have to achieve these aims and goals?

INTERNATIONAL JOINT COMMISSION
UNITED STATES AND CANADA
WASHINGTON, D. C. 20440

CHAIRMAN
UNITED STATES
SECTION

May 10, 1982

**RESPONSE TO
SUPPLEMENTAL LIST
OF QUESTIONS**

I am pleased to respond to your Supplemental List of Questions further to my testimony given on March 19, 1982.

QUESTION 1

Question: A.1. In regard to Question 1A, you asked if the Commission can adequately meet its responsibilites under the Agreement. Specifically you asked if EPA cuts in Industrial Effluent Guideline Efforts will prevent the United States from meeting the December 31, 1983 program deadline?

Answer: A.1. Preliminary indications are that these reductions will make it more difficult for the United States to meet the December 31, 1983 deadline. However, the extent to which this difficulty will be reflected in a postponement of the deadline is at this time impossible to ascertain. We will be asking our International Great Lakes Water Quality Board to advise us further on this question.

Question: A.2. Further, you asked if the elimination of Great Lakes research funds to EPA's Grosse Ile Lab will effect the continuing efforts to control the eutrophication and toxic substances in the Great Lakes.

Answer: A.2. To the extent that Grosse Ile has been responsible for doing work uniquely related to Great Lakes conditions, work that cannot be replicated in other EPA Labs, we do expect that in the long run the loss of this laboratory would curtail our ability to properly apply necessary resources to the continued clean-up effort of the Great Lakes system, not to mention the loss of valuable expertise and program continuity that has already taken place. Again the exact extent to which this curtailment will apply is in the process of being studied by the International Great Lakes Science Advisory Board and we will be issuing our report soon after we have heard the report of our Science Advisory Board in November of this year.

Question: A.3. A third question has to do with the extent to which cuts in EPA's Region V Great Lakes National Program Office support will prevent the United States from adequately monitoring compliance of pollution control called for under the Agreement.

Answer: A.3. The short answer is that progress will be slowed, but again we must emphasize that it is impossible at this time to predict with any accuracy the extent to which progress will be slowed. We are immediately concerned, however, with the impact the proposed cuts may have on non-point source and industrial pollutant work programs. We will also refer this question to our Water Quality Board for comment and advice.

QUESTION 2

Question: In response to your question of our opinion of a need for further coordination of Great Lakes research, development, and planning.

Answer: I think our testimony made it clear that this was a highly desirable objective for a unique international resource such as the Great Lakes.

QUESTION 3

Question: An extention to the above question was whether you felt the Commission could work with an office such as that contemplated in your legislation?

Answer: Without commenting on the specific nature of your legislation, the Commission would, of course, do everything within its power to work effectively with any office that would be situated to more effectively coordinate Great Lakes Research, Development and Planning. Our only comment would be that to the extent possible, such an office ought to take advantage of existing agencies and programs that are presently in the Great Lakes Region, since the formation of a new agency always involves initial confusion and a resulting substantial amount of time before that new agency can effectively and smoothly work with the many other agencies, both in the United States and Canada, which address similar problems.

QUESTION 4

Question: Your last question requested of us our opinion as to the extent to the commitment that exists today on the part of the United States and Canada to honor their obligations under the 1978 Great Lakes Water Quality Agreement?

Answer: Generally speaking we believe that commitment does exist on both sides of the boundary. We note, for example, that President Reagan specifically commited the United States to honoring the Agreement when he addressed a Joint Session of the Canadian Parliament in the Spring of 1981. We hope that Agency heads responsible to the President have taken notice of his personal commitment to honor the Agreement. As far as specific recommendations to achieve the aims and objectives of the Agreement are concerned, these are the subject of our Annual Reports to the Governments and we expect that the first Bi-ennial Report called for under the 1978 Great Lakes Water Quality Agreement will shortly be submitted to the Governments and released to the public. As soon as the report is available, we will see that the Committee receives a copy.

Again, I would like to thank you for affording me the opportunity to adddress the Committee and please let me know if there are any further questions.

Sincerely yours,

Robert C. McEwen

Robert C. McEwen

Questions for Mr. Robert Sugarman

1. Your testimony mentions that Great Lakes environmental issues and concerns many times are not adequately addressed -- "they tend to fall between the cracks". How does H.R. 3600 alleviate this problem?

2. Your testimony praises H.R. 3600 for its effectiveness in focusing on the impact of activities in the Great Lakes area through Sections 203 and 204. Do you feel that Great Lakes issues have not been seriously considered by federal agencies preparing Environmental Impact Statements?

3. In light of recent federal Great Lakes budget cuts, do you feel the United States is allocating necessary funds to meet its commitments under the Great Lakes Water Quality Agreement of 1978?

ANSWERS TO ADDITIONAL QUESTIONS OF SUBCOMMITTEE

1. In my testimony, I stated that Great Lakes environmental issues and concerns tend to fall between the cracks. HR 3600 would address and alleviate this problem directly, in that it would create a focus of concern for the Great Lakes, in the form of an office which would be responsible for looking at proposed activities from a Great Lakes point of view. Mechanically, draft environmental impact statements, public notices, and other documents which agencies now use to coordinate with other agencies, would routinely flow to this office, where the incumbents would be charged with the duty of focusing on the proposals from a Great Lakes perspective. In this way, the Great Lakes would no longer be a crack between the national perspective of the federal agency, and the local perspective of state agencies.

Similarly, with problems and issues arising at the Washington level, there would be an agency which could provide Congress, and would be charged to provide Congress, with an analysis of existing activities from the perspective of the Great Lakes. In this way, Washington activities would no longer fall between the cracks.

Sections 203 and 204 would also contribute to alleviating this problem in a very significant way, in that they would require the acting agencies to, in the first instance, focus on the Great Lakes aspects of their activities even prior to providing the Great Lakes offices input.

In this way, hopefully, the Great Lakes office would have the duty only of insuring that the acting agency as adequately pursued this perspective, and would not have to start the process of its receipt of the proposed action. Early coordination should insure that the Great Lakes perspective is appropriately taken into account at the time of project development, rather than as an afterthought. This has been a major success that NEPA has enjoyed over the last twelve years, and there is every reason to believe that when specifically required to do so, federal agencies can effectively carry this function out in the first instance.

2. The Great Lakes issues have been routinely ignored or passed over lightly by federal agencies in preparing environmental impact statements, and that is one of the principal reasons why HR 3600 is required. For example, in the impact report on the Lake Erie transmission line, now being considered by FERC, the applicants did not discuss the implications for the Great Lakes of generating additional coal-fired electric power on water quality, specifically with reference to acid rain issues, in various tributaries to the Great Lakes. The assessment focused on the localized impacts of the transmission line, proposed to be constructed under Lake Erie, on the bottom areas of Lake Erie, but did not focus on any of the impacts on the Great Lakes system as a system, including that mentioned above.

Similarly, in preparing an impact statement on the United States Steel proposed plant at Conneault, Ohio and Pennsylvania, the applicant and the Corps of Engineers failed to focus on the impacts of the proposed activities, both primary and secondary, on the Great Lakes system.

Equally, most or all of the Section 208 reports, including the environmental assessments, prepared by regional planning agencies under EPA supervision between 1975 and 1980, failed to consider the impacts of pollution on the Great Lakes, focusing instead only on the tributaries, and to a small extent, on localized areas.

In these cases and many others, it is apparent that agencies dealt with the Great Lakes as if they were beyond the scope of their concern.

3. I cannot directly state whether the U.S. is allocating the necessary funds to meet its commitments under the Great Lakes Water Quality Agreement of 1978. However, I can state that with prior budgetary levels in effect between 1976 and 1980, there were some serious problems in adequately meeting the commitments of the United States. For example, the United States agencies were unable to adequately evaluate the extent of toxic contamination of the Lakes, to adequately determine the sources of toxics contaminants, or to provide adequate corrective measures. In addition, there were serious inadequacies of timely correction of pollution problems by local and state agencies. On the administrative level, U.S. Federal agencies had serious budgetary constraints precluding adequate travel, research, monitoring, and data analysis.

It is of course conceivable that ways could be found to provide all of the above without further budgetary allocations, and even substantially smaller ones, as has been proposed, and to some extent, already implemented. However, it seems highly unlikely that this could be done, and there is no reason for believing that the budgetary cutbacks have resulted in anything other than further cutbacks in the adequacy of performance. Therefore, although, as I previously stated, I cannot tell directly whether the U.S. has adequate budget to meet its obligations, I conclude circumstantially that such does not exist.

Questions for Mr. James Fish

1. The Great Lakes Commission has been designated to pick up some of the functions of the now defunct Great Lakes Basin Commission. Which of these functions has the Great Lakes Commission assumed and how successful have you been in performing them?

2. Your testimony mentions that the purpose of H.R. 3600 is almost impossible to carry out. Why do you feel this way and what recommendations would you make to bring the purpose within realistic expectations?

3. You express doubts as to the effectiveness of the proposed Great Lakes Research Office in successfully coordinating federal and state Great Lakes activities. What recommendations do you have to make this office more effective?

4. What suggestions do you have on revising the Great Lakes Environmental Impact Analysis section? Do you feel the Executive Director has too much or too little authority under Section 203?

ANSWERS TO QUESTIONS ON TESTIMONY PRESENTED TO THE NATURAL RESOURCES, AGRICULTURE, RESEARCH AND ENVIRONMENT SUBCOMMITTEE, COMMITTEE ON SCIENCE & TECHNOLOGY

JAMES FISH, EXECUTIVE DIRECTOR
GREAT LAKES COMMISSION

Question #1 - The Great Lakes Commission has been designated to pick up some of the functions of the now defunct Great Lakes Basin Commission. Which of these functions has the Great Lakes Commission assumed and how successful have you been in performing them?

The Great Lakes Commission has initiated a new Committee structure consolidating activities of five Committees into two. The new Committees are Natural Resources Management with a Subcommittee on Water and a Subcommittee on Land & Air. The second Committee is Transportation & Economic Development with a Subcommittee on Great Lakes/Seaway & Related Transportation and a Subcommittee on Economic Development and Promotion.

To facilitate the participation of federal agencies and coordination with them the Great Lakes Commission requested each federal agency that had participated in the Great Lakes Basin Commission to designate a specific individual in their agency to receive Great Lakes Commission publications, meeting announcements and background materials, and to participate fully in Subcommittee and Committee discussions. Through this Committee participation process, the Great Lakes Commission expects to facilitate additional discussion with the federal agencies while not mandating their consent to any Commission action.

In addition, the Commission plans to initiate requests to Canadian Provincial and federal agencies inviting them to designate individuals to serve as observers to the Great Lakes Commission. These advisor and observer participants in the Commission activities would be analogous to the Great Lakes Basin Commission functions.

Overall, however, the GLC advisory functions are very similar to those of the Great Lakes Basin Commission. There is one major difference, however. That is, that the Great Lakes Commission tends to function in a policy analysis role where the Great Lakes Basin Commission tended to function in a more technical analysis role. Specific technical analyses required by the Great Lakes Commission in order to perform its advisory functions will come from participating States and federal agencies.

Question #2 - Your testimony mentions that the purpose of H.R.3600 is almost impossible to carry out. Why do you feel this way and what recommendations would you make to bring the purpose within realistic expectations?

The legislation states the purposes as follows: "(b) The purposes of this title are - '(1) to provide for a rational and effective coordinatin of federally supported research aimed at increasing fundamental knowledge in support of efforts to preserve and protect the environmental quality of the

Great Lakes; '(2) to identify the needs and priorities for such research as will be required in the future to preserve and protect the environmental quality of the Great Lakes; '(3) to assure a comprehensive and balanced approach to federally supported research on the Great Lakes; '4)to encourage the utilization of the results and findings of research relating to the Great Lakes in the decisionmaking processes which affect the environmental quality of the Great Lakes; '(5)to foster public understanding, and to assure greater understanding at all levels of government, of the role of the Great Lakes as a unique natural resource and the greatest ecological entity of its kind.

In addition to the purposes, the bill states national policy as follows: "C. The Congress, in recognizing the Great Lakes to be a unique national and international resource declares that- '(1) it shall be the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures in a manner calculated to enhance, preserve, and protect the environmental quality of the Great Lakes, to create and maintain conditions under which individuals and the Great Lakes can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations; and '(2) consistent with the foreign and domestic policies of the United States, it shall be the policy of the Federal Government to maximize international cooperation (with Canada and other nations) in maintaining, enhancing, preserving, and protecting the environmental quality of the Great Lakes."

It is my opinion that the purposes and policy of an act cannot be effectively separated. The purpose outlines goals of rational and effective coordination of federally supported research, need identification and priority establishment, a comprehensive approach to federally supported research, full encouragement to utilization of research and developing public understanding at all levels of government. Most federal agencies have as one of their charges the full utilization of their research and have been ineffective in accomplishing this objective to date. Special programs have been established by some agencies for the decimination of research which were funded at much higher levels than the total Great Lakes Research Office.

The establishment of need and priorities is also a function of all research programs to my knowledge. Further, it is the responsibilty of each of the respective federal agencies to identify individually and cooperatively a comprehensive and balanced approach to research in the various regions. It seems almost impossible, if not improbable, that any individual as executive director of a Great Lakes Research Office or any staff operating on a limited budget could provide this service for all of the agencies. The Great Lakes Commission itself has had some of the same goals during its 25-year history. Although funded at a much lower level, most of the time we feel that we barely make a dent in achieving these same purposes.

Likewise, the policy statement in both C 1 and 2 are already imbued in law for the Environmental Protection Agency and to some extent for the International Joint Commission. It is also my understanding that these policies are more generically stated in legislation relating to NOAA and the Fish & Wildlife Service.

It would seem to me that singling out a small number of these purposes and policies and focusing the Office on those limited objectives could make it both more believable in the eyes of the public, the States and the federal agencies and give it a better chance of succeeding in its mission.

Question #3 - You express doubts as to the effectiveness of the proposed Great Lakes Research Office in successfully coordinating federal and state Great Lakes activities. What recommendations do you have to make this office more effective?

I do have significant doubts as to the ability of the proposed Great Lakes Research Office to successfully coordinate federal and state Great Lakes Research activities. First, each of the federal agencies, while sharing a common mandate for the protection and enhancement of the Great Lakes, has its own separate and independent mission. Coordination is an activity which while being costly, does not achieve budgetary benefits. Until the federal Congress begins to fund coordination to the agencies themselves and rewards their activities of coordination, there can be no effective coordination. Each of the agenies has its own separate and independent authorizing and appropriating committees. Even within certain committees, the subcommittees become advocates for their respective areas of responsiblity. None appear to be in a position to further reward their agencies for the act of coordination. Rather, the agencies are rewarded for special expertise in their own areas without any recognition of their coordination responsibility.

A more successful approach might be to simply have "the office" or an existing agency compile information on ongoing and completed research and display duplication, if it in fact exists, and voids in the research responsibility. This would provide the Congress itself with the tool for effecting coordination among the agencies without creating a special new structure.

In another area, coordination does not bring forward information on whether we know the answers or need more information. An alternate approach is needed in many areas as a synthesis of available studies. A synthesis, by knowledgeable reserchers could in many areas put issues to rest by combining available data wile prioritizing necessary "next steps" in research

Question #4 - What suggestions do you have on revising the Great Lakes Environmental Impact Analysis section? Do you feel the Executive Director has too much or too little authority under Section 203?

The Environmental Impact Analysis section should be revised to provide specific guidance to the executive director in his establishment of "significance" of actions affecting the Great Lakes. I understand that revised legislation possibly under consideration indicates that the executive director shall be guided by the purposes of this act. Because they are extremely broad, it appears that this does not directly address the question of the executive director's determination of "significance" of actions affecting the lakes. Unless specific guidance is given to the executive director, his rule-making authority is extraordinarily broad. The executive director, could in fact, determine that all actions of any type are "significant" under the purposes of the act, thereby creating a "significant" bottleneck for projects beneficial to both the environment and the economy.

QUESTIONS FOR LEE BOTTS

1. You make a strong statement in support of managing Great Lakes research and planning at the regional level. Please elaborate on this point briefly, and relate how Section 202 of H.R. 3600 will achieve this aim for the improvement of Great Lakes problems.

2. In what way has the toxic and hazardous waste problem been ignored by EPA and NOAA officials? Does H.R. 3600 have adequate provision to prevent this kind of situation in the future?

3. Your testimony notes that as of November 1981 the International Joint Commission has not devised a comprehensive management strategy for directing toxic substances activities in the Great Lakes. How serious is this lack of strategy to the long term health of the Great Lakes ecosystem? How can H.R. 3600 help in preventing these kinds of problems?

4. Are the responsibilities and functions of the now terminated Great Lakes Basin Commission being adequately met by other Federal and state agencies?

Lee Botts

Question 1: How does Section 202 of HR 3600 provide for management of Great Lakes research and planning at the regional level?

Answer: The difficulty previously has been that agency research budgets are acted on arbitrarily at the Washington level and usually without consultation at the regional level. Thus the Great Lakes laboratories and program offices have developed budget requests for funding for research on the basis of firsthand knowledge of problems and results of previous research. The requests are forwarded to Washington where they are usually reviewed by persons unfamiliar with Great Lakes problems and institutions such as the Great Lakes Water Quality Agreement with Canada and who more likely than not are more expert in ocean problems. Thus there has been a lack of appreciation for the significance of the basis for the research funding requests.

When orders for cuts in funding have come back from the Office of Management and Budget to the agencies, such as the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, cuts have been imposed on the regional programs disporportionately and without consultation at the regional level. At times the Washington headquarters of agencies such as EPA have cut regional programs on their own initiative without regional consultation.

Although Section 202 of HR 3600 does not give final authority or absolute control to the Executive Director of the Great Lakes Research Office, consultation would be required in the development of federal research programs and budgets. Further, the existence of the Great Lakes Office would, I feel, give greater weight to recommendations from the regional level. It would establish a system of accountability that does not now exist for decisions made in Washington affecting regional programs. Finally, in my judgment the Great Lakes Research Office as an institution would influence agencies to give more recognition to the national significance of the Great Lakes as a resource.

Question 2: How has the toxic and hazardous waste problem been ignored and would HR 3600 prevent this kind of situation in the future?

EPA at the Washington level resisted recognition of the significance of the PCB contamination of the Great Lakes system for several years, hindering the ability of the laboratories and programs in the region to develop adequate research efforts. NOAA, as I testified previously, in Washington did not identify toxic contamination of the Great Lakes in the first version of its first give-year federal research program in 1978 because it did not consult at the regional level.

Even though both agencies now acknowledge the problem, the Washington levels have not responded to the need for continued monitoring to detect future problems at an early stage. HR 3600 does not directly provide for the specimen banking system and ecosystem research that is needed, but it would make it more possible for these needs to be addressed at the regional level by removing the hurdles that now have to be overcome at the Washington level.

Experience with DDT, mercury and mirex as well as PCBs have demonstrated that the national interest will be served by prompt and long-term attention to contamination of the Great Lakes system. At this time we simply do not know when, where and how other chemical contamination will be manifested, though we know a great deal more than previously about what to look for.

Question 3: How serious to the long-term health of the Great Lakes ecosystem is the lack of a comprehensive strategy for toxic substances management?

Toxic contamination has already virtually eliminated Great Lakes fish as a source of food. We simply do not know whether the presence of toxic chemicals will ever rule out use of the Great Lakes for drinking water. It is critical to continue research that will amplify understanding of how toxic substances in the lakes affect human health as well as life in the lakes because use of other sources of drinking water, especially ground water, are being eliminated more and more by contamination from hazardous wastes.

It will not make any difference how much water is in the Great Lakes if they are unsafe to drink. Yet the size of the Great Lakes ecosystem means that by the time changes have become obvious it is virtually too late to do anything to correct problems. Adequate research is the only way to recognize changes early enough to prevent irreversible changes in the future.

HR 3600 will help prevent and avoid the lags in response that have occurred in the past.

Question 4: Are the responsibilities and functions of the now terminated Great Lakes Basin Commission being adequately met by other Federal and state agencies?

Answer: No attempts are being made to provide the coordinating and communication functions of the Great Lakes Basin Commission by either Federal or state agencies. The Great Lakes Commission received the remaining assets of the Basin Commission but is not using them to conduct regional studies. There is at present no region-wide forum in which the states can work together on Great Lakes problems except fishery management, and no way in which state resource agencies can coordinate with federal agencies. No agency is addressing long-term planning issues for water quality or water quantity on a regional basis.

QUESTIONS FOR ROBERT RAGOTZKIE

1. What consequences do you foresee should Federal support for Great Lakes research be drastically reduced? For what reason do you feel the Administration is reducing Great Lakes research?

2. Do you believe that the Great Lakes are afforded equal protection with coastal regions under the National Ocean Pollution Planning Act? If not, what do you believe must be done to achieve this "equal protection"?

3. You state (p. 2) that unless we continue research and surveillance efforts we will not "know whether we have gone far enough in setting the present standards." What are these standards and how do they compare with Canadian standards?

4. In the Great Lakes Region, who are the primary producers of toxic chemicals? What preventive or corrective means are these producers taking?

5. On page 3 of your statement, you say that the same sources of toxic substances "reach the Lakes through the atmosphere from sources outside the Great Lakes basin." Have these points of origin been documented? What action has taken place to remedy/reduce these sources? What is being done about local air pollution?

6. On page 5 you state that a great deal of research cooperation presently exists, that personnel in the Sea Grant Program meet frequently, that directors and scientist meet. Specifically, how can H.R. 3600 further improve this cooperation?

7. Do you have any suggestions on how H.R. 3600 could be improved to afford greater protection for the Great Lakes?

Answers to Questions from Subcommittee on Natural Resources, Agricultural Research and Environment with regard to H.R. 3600 by

Robert A. Ragotzkie
Director, Sea Grant Institute
University of Wisconsin-Madison

1. The consequences of drastically reducing federal support for Great Lakes research will be both short and long term. In the short term the response of the Lakes to control measures to reduce the input of excess nutrients and known toxic substances will not be known. Present trends in the water quality of most of the Great Lakes appear to be toward improvement but whether these trends are real and will continue is not known. Investment of public funds in these control measures is paying off, but without continuing research and surveillance the rationale for maintaining and upgrading these control programs will be gone. There will be a natural tendency to relax these programs thus undoing 15 years of expensive but cost effective effort.

   In the longer term the contamination of fish by known and unknown toxic or carcinogenic substances will pose human health problems about which we know little. The ultimate result will be the closure of Great Lakes fisheries, both commercial and sport, as a source of human food. The Great Lakes are extremely productive bodies of water. At a time when coastal fisheries are being subjected to excessive pressure from both U.S. and foreign fishermen, it makes no sense to deny ourselves the food production of these inland seas.

   The Great Lakes are the source of drinking water for about 25 million U.S. citizens and could in emergency provide drinking water for even more. Potential hazards to this use such as chloramines due to chlorination of sewage, local concentrations of toxic substances like PCBs, mirex, toxaphene, dioxin and others, and bacteriological and viral contamination could compromise this use and endanger public health. Continuing research is critical to identify and prescribe solutions to these present and future problems. The integrity of the Lakes as a source of drinking water is also a matter of national security.

Finally a drastic reduction in the U.S. Great Lakes research program will result and indeed already has resulted in a loss of research capacity by government laboratories and universities. Great Lakes scientists are already leaving this research area and too often it is the best ones who leave first. Coupled with this immediate loss of senior scientists is the decrease in training of graduate students on uniquely Great Lakes subjects. Thus the future scientific expertise on the Great Lakes is being mortgaged. The spigot of trained people cannot be turned off and on at will; it takes 10 years or more to bring a student into mainline, productive research.

The announced reason for the Administration's reduction of Great Lakes research is that the Lakes have recovered and further research is not needed. This is patently false. The Lakes may be improving but the pressures on them -- as waste sinks, shoreline development, fishery production, and multifaceted recreational uses -- are increasing. The problems of today will not disappear and new problems will certainly develop as these use pressures grow. In sum the most likely reason for reducing Great Lakes research is a lack of understanding by the federal government of the uniqueness of the Great Lakes and the pressures being placed on them. The value of the resources derived from the Lakes is generally underestimated and tends to be viewed as local and regional. The facts are that these are national resources and national problems. Failure to recognize this is resulting in the abandonment of the federal responsibility for the Lakes.

2. In theory the Great Lakes receive equal protection under the National Pollution Protection Act. In practice they do not. The reason for this is again the lack of understanding of the uniqueness of the Lakes and their pollution problems. For example, eutrophication (excess fertilization by nutrients) is a Great Lakes problem but is generally not a coastal problem. Toxic substances are contained in the Lakes while in the oceans flushing by tides and ocean circulation ultimately removes and dilutes these substances. Finally the Great Lakes are a source of drinking water while the oceans are not.

In order to achieve equal protection, there must be a great deal more attention paid to the needs of the Great Lakes under this Act and research specifically focused on the Lakes must qualify for support.

3. The "standards" we are operating under are primarily the water quality objectives agreed to by the U.S. and Canada under the 1978 Water Quality Agreement. In the U.S. the EPA and state agencies set and enforce effluent standards designed to achieve these water quality objectives.

4. In general industry is the primary source of toxic chemicals in the Great Lakes. Individual industries themselves are taking corrective action by (1) pretreatment of their wastes to remove these substances when they are known and (2) modifying their processes to eliminate, reuse, or reduce the release of toxic chemicals. Research is now underway to identify these sources and to assist industry in controlling them. Frequently the industry itself does not know it is producing toxic substances and regulatory agencies cannot possibly monitor all industries for all possible chemicals. Research to better address this problem is underway and there is reasonable promise of progress in developing effective and economic approaches.

5. Cities and industrialized areas outside the Great Lakes basin and upwind from the Great Lakes, i.e., south and west of the Lakes, are known sources of airborne toxic chemicals. By analysis of weather patterns and wind trajectories, it has been inferred that these substances are transported to the Lakes and deposited on the water surface either by dry fallout or by precipitation in the form of rain or snow. Though the evidence is inferential, it is extremely convincing and can be accepted as true. However the actual amounts of any particular chemical being transported from a particular source (city or industrialized area) to the Lakes cannot be documented. In order to do so would require much more research on the interbasin flux of airborne contaminants and on the rates of dry and wet fallout.

No particular actions have been taken to reduce these sources from the point of view of the Great Lakes. Abatement actions are primarily based on local air quality requirements.

Actions on local air pollution which might impact the Lakes are not taken from the point of view of the Lakes. For example, heavy metals like lead from auto emissions are controlled nationally and are justified on health grounds. Other local sources are controlled on the basis of local air quality and real or potential human health hazard, not on the basis of impact on the Lakes.

6. In order to improve research cooperation in the Great Lakes, H.R. 3600 should require that university research, particularly but not exclusively that conducted by Sea Grant Programs, be included in any inventory of research activities. More importantly Great Lakes university Sea Grant Programs, all of which are organized and focused on specific Great Lakes issues and problems, should be utilized in developing joint program planning and priority identification for Great Lakes research. Federal laboratories should be required to engage in joint program planning and the universities should be included in this function. It is not enough to coordinate research projects and programs after they are underway. Without initial cooperation in program planning, after-the-fact coordination will result only in sterile and bureaucratic lists of projects, objectives, results, and so on.

7. H.R. 3600, as I understand it, is primarily aimed at achieving better coordination of Great Lakes research in order to more effectively protect and preserve the quality and resources of the Lakes. Two requirements must be satisfied to achieve this goal. First, there must be Great Lakes research programs at both federal laboratories and at universities. Both are essential in order to develop the proper mix of fundamental, long-term research best done by universities and highly focused, specific problem-oriented research to answer immediate and operational questions which is best done by government laboratories. Second, the identification of research needs and priorities and the program planning to address these needs must be carried out with input from both government laboratories and universities. Lacking this early joint programming step, the resulting programs will be less well coordinated and less cost effective.

The research coordination goal of H.R. 3600 will be achieved only if the implementing organization (Great Lakes Program Office) recognizes and acts on the above premises.

QUESTIONS FOR DR. DAIL BROWN (NOAA)

1. What is your assessment of current state of environmental quality in the Great Lakes? Is it getting better or worse and what evidence would you cite to support your answer? To what degree has NOAA's efforts contributed to this trend?

2. Do you believe that the Great Lakes are a valuable national resource and that their protection should be a matter of Federal policy? Is this policy set forth in existing law and if so, where is it explicitly stated and how is this policy being implemented?

3. What pollution problems threaten the Great Lakes the most and what has NOAA done to respond to these threats? How successful has this response been?'

4. You state that, under the National Ocean Pollution Planning Act, the Great Lakes have equal protection with other coastal regions of the U.S. What evidence would you cite to substantiate that such protection is indeed equal? What is NOAA doing to protect the environmental quality of U.S. coastal regions, how effective have they been, and how do these efforts compare to Great Lakes protection activities?

5. You also state that Great Lakes research needs are addressed in the Federal 5-year plan developed pursuant to the National Ocean Pollution Planning Act. While these needs might be addressed in the 5-year plan, what actual research is NOAA doing, or plans to do, to satisfy these needs?

6. NOAA plans to terminate its research program on the Great Lakes in 1983. Why is NOAA ending its Great Lakes research program? What impact is anticipated from this action to end Great Lakes research?

1. What is your assessment of the current state of environmental quality in the Great Lakes? Is it getting better or worse and what evidence would you cite to support your answer? To what degree has NOAA's efforts contributed to this trend?

Overall, the environmental quality of the upper Great Lakes is quite good and that of the lower lakes, while not up to the desired quality, is improving. Reports that the lakes are getting cleaner are supported by scientific data. In Lake Erie phosphorus levels are decreasing and algal masses occur much less frequently. Concentrations in fish of organic chemicals such as PCBs and DDT have shown marked decreases in certain parts of the Great Lakes system. With continued commitment and careful management, the environmental quality of the lakes will continue to get better.

The NOAA contribution to this trend is described in the responses to questions 3 and 5.

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2. Do you believe that the Great Lakes are a valuable national resource and that their protection should be a matter of Federal policy? Is this policy set forth in existing law and if so, where is it explicitly stated and how is this policy being implemented?

2. The Great Lakes are a valuable national resource and their protection should be a matter of Federal policy. The most explicit statement of such a policy is found in the Canada-United States Great Lakes Water Quality Agreement, which was signed in Ottawa on November 22, 1978.

The United States has tried to implement the Water Quality Agreement in the absence of a clear national policy regarding the region and under a patchwork of agency legislation predating the Agreement.

3. What pollution problems threaten the Great Lakes the most and what has NOAA done to respond to these threats? How successful has this response been?

The two major water quality concerns of the Great Lakes are: 1) toxic contaminants and 2) eutrophication.

Since 1979 GLERL has been involved in a cooperative research program with the Universities of Michigan and Minnesota to develop models which could simulate and thus be used to predict the long-term behavior and effects of toxic organic substances in the Great Lakes. Initial results from this program have been presented to the International Joint Commission, the American Chemical Society, and at an international workshop on PCBs in the Great Lakes. GLERL has conducted an extensive program on the causes and effects of eutrophication. The lab has developed improved ecosystem models which form the basis for resource management models. Plankton succession studies have focused on evaluating relationships between uptake kinetics of dissolved phosphorus and phytoplankton growth rates. A program in particle dynamics is an outgrowth of the recognition that the behavior of nutrients and contaminants is strongly influenced by the sorptive characteristics and hydrodynamic behavior of particulate matter. A eutrophication model for the Great Lakes developed by GLERL predicted the rate of recovery of Lake Erie and spurred continuing cleanup efforts. Models have been developed, with the Corps of Engineers and the Department of Agriculture, to assess the effects of non-point source pollution. Scientific information was developed and applied by GLERL staff to support the Great Lakes Environmental Planning

Study. The study established alternatives for using and protecting the lakes, the costs and expected effects of the alternatives, and the need to balance these costs and effects. Recent contributions include reports on (1) phosphorus bioavailability of pollutant inputs and its impact on management, (2) risk assessment as applied to Great Lakes water quality management, and (3) ecological factors in Great Lakes water quality management.

In summary, we feel the NOAA response has greatly aided in controlling eutrophication, but there are still major research needs in this area. In the case of toxics the work has just begun.

4. You state that, under the National Ocean Pollution Planning Act, the Great Lakes have equal protection with other coastal regions of the U.S. What evidence would you cite to substantiate that such protection is indeed equal? What is NOAA doing to protect the environmental quality of U.S. coastal regions, how effective have they been, and how do these efforts compare to Great Lakes protection activities?

My testimony states that "Under the National Ocean Pollution Planning Act, the Great Lakes have co-equal status with the Pacific, Atlantic, Alaskan, and Gulf Coasts of the United States." Having co-equal status means that our efforts to identify priority problems, coordinate research activities, and disseminate information are similar in all regions of the country. The Great Lakes were given equal attention with other regions during our efforts to prepare the second Federal Pollution Plan. Protecting the environmental quality of U.S. coastal regions is a complex process involving regulatory and management practices at the Federal, state, and local level. Federal pollution regulation and management do not discriminate among regions of the U.S.

NOAA has no responsibilities to regulate pollution in the oceans or Great Lakes. Rather, NOAA's marine pollution program contributes to the protection of U.S. coastal regions by developing sound scientific and technical information on pollution problems, assessing consequences to the environment, and recommending appropriate actions to regulatory agencies such as EPA. It is difficult to compare on a region-by-region basis the effectiveness to which information developed by NOAA has been applied to protect environmental quality. In the Great Lakes region, however, NOAA has made a contribution to understanding the two highest priority problems -- toxic organic compounds and eutrophication.

5. You also state that Great Lakes research needs are addressed in the Federal 5-year Plan developed pursuant to the National Ocean Pollution Planning Act. While these needs might be addressed in the 5-year Plan, what actual research is NOAA doing, or plans to do, to satisfy these needs?

The Second Federal Plan for Ocean Pollution Research, Development, and Monitoring identifies six problem areas of highest priority in the Great Lakes system. These are: contaminants and toxics; eutrophication; habitat modification; social, economic, and institutional considerations; major discharges; and risk analysis. NOAA has made contributions in the first three areas and risk analysis. The NOAA research activities in the Great Lakes that are specifically related to the high-priority needs identified in the plan are as follows:

Contaminants and Toxics

- Laboratory and field experiments designed to provide information on various pathways and rates of removal of toxic organics from the ecosystem and to develop a model hierarchy to simulate the cycling and transport of selected toxic organic substances in the Great Lakes.
- Research on the movement of particulates, critical to understanding the movement of many types of contaminants in the lakes.
- Work continues on a model to predict long-term movement of chlorinated hydrocarbons, oil, heavy metals, and radioactive wastes.

Eutrophication

- GLERL, the University of Michigan, and the University of Wisconsin completed an assessment of the state of knowledge of nutrient cycling in the Great Lakes ecosystem. This resulted in a conceptual model of phosphorus cycling. Nutrient release by zooplankton and benthic invertebrates was identified as a major recycling mechanism of nutrient supply to algae and is a major focus for future studies.
- Evaluation of alternative phosphorous control strategies to determine the least costly phosphorus control program capable of achieving Great Lakes water quality objectives by identifying the most economical mix of point and non-point source controls and ranking the various control options according to their cost-effectiveness.

Habitat Modification

- Research on ecological succession and trends of Great Lakes biota.
- Studies to identify present-day species distributions of benthic animals and, by comparison with previous studies, will identify trends over the last half century in southern Lake Michigan. Bottom-dwelling organisms fill an important compartment in the food chain and are sensitive to water quality and sediment conditions.

Risk Analysis

- o Development and application of system analysis methods, such as optimization analysis and risk assessment, to the solution of problems of importance to Great Lakes resource use and management.
- o Development of scientific information useful to the determination of the pollution assimilative capability of the Great Lakes and marine coastal waters in an attempt to minimize costs and risks in pollution management.

6. NOAA plans to terminate its research program on the Great Lakes in 1983. Why is NOAA ending its Great Lakes research program? What impact is anticipated from this action to end Great Lakes research?

Although the NOAA research in the Great Lakes will be greatly reduced, it is planned that some investigations will continue with funding available to the agency under Title II of the Marine Protection, Research, and Sanctuaries Act and Section 6 of the National Ocean Pollution Planning Act. We expect to continue necessary research on toxic organic compounds and eutrophication.

APPENDIX II

CANADIAN CONCERNS

DON FUQUA, FLA., CHAIRMAN

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TOM HARKIN, IOWA
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BILL LOWERY, CALIF.

COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
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HAROLD P. HANSON
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GERALD E. JENKS
MINORITY STAFF DIRECTOR

March 2, 1982

George Rejhon, Counsellor - Environment
The Canadian Embassy
1746 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Dear ~~Mr. Rejhon~~ George:

The Subcommittee on Natural Resources, Agriculture Research and Environment is currently involved in examining the role of research in the United States Environmental Protection Agency in conjunction with the Agency's FY 1983 budget. Of particular concern to our committee is the evaluation of substantial cuts in EPA's Great Lakes programs in light of this country's commitments to the Great Lakes Water Quality Agreement of 1978.

It has come to the Committee's attention that the Canadian Government has expressed concern over the United States Environmental Protection Agency budget cuts in the form of a correspondence sent to the U.S. Department of State on April 30, 1981. Mr. Brian Burby of my staff contacted Mr. Robin Porter of the U.S. Department of State concerning the possible release of this document through his office. Since the document is of Canadian origin, Mr. Porter could not accommodate this request, but suggested obtaining this information from the Canadian Embassy. Accordingly, we would appreciate it if you could provide the Subcommittee with a copy of this document, anticipating it to be helpful to our Members when they consider the Great Lakes programs.

Your favorable and prompt reply to our request will be greatly appreciated.

Sincerely,

George

George S. Kopp
Staff Director
Subcommittee on Natural Resources,
Agriculture Research and Environment

GSK/Bgb

Canadian Embassy Ambassade du Canada

1746 Massachusetts Ave., N.W.
Washington, D.C. 20036-1985

March 4, 1982

Dear ~~Mr. Kopp~~ George,

I was interested to learn that the Subcommittee on Natural Resources, Agriculture Research and Environment is proposing to evaluate the possible effects on the Great Lakes Water Quality Agreement of proposed budgetary cuts. This matter has been under continuing review by the Canadian Government for about one year. In general, we believe that the cooperative programme under this Agreement has been a considerable success and that our joint level of effort should be maintained.

With specific regard to your request for diplomatic correspondence, I believe that, as this matter remains under bilateral consideration, it would be preferable not to make the documents public. At the same time, the nature of our concerns as well as the specific issues from which they spring are public knowledge. I would therefore be happy to provide you with an informal briefing, on the basis of which you would have a more complete picture of the Canadian position.

I trust you will find such a briefing satisfactory.

Yours sincerely,

George

George Rejhon
Counsellor (Environment)

Mr. George Kopp,
Staff Director,
Natural Resources, Agriculture
Research and Environment,
821 House Office Bldg., Annex I,
Washington, D.C. 20515

COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

March 5, 1982

MEMORANDUM

TO: James H. Scheuer, Chairman
Subcommittee on Natural Resources, Agriculture Research and Environment

FROM: George S. Kopp, Staff Director

SUBJ: Canadian Embassy concerns over U.S. EPA FY 1982 budget cuts

At the invitation of the Canadian Embassy, Brian Burby of our staff was briefed on the Canadian Government's concern over U.S. Environmental Protection Agency (EPA) FY 1982 budget cuts. This concern focused on the effects these budget cuts may have on U.S./Canada cooperation under the Great Lakes Water Quality Agreement of 1978. Brian's minutes of conversation are attached.

GSK/km

MINUTES OF CONVERSATION March 4, 1982

Subject: Briefing by Canadian Embassy

Mr. George Rejhon, Counsellor
Ms. Sheila Tooze

Concerns About Budget Cuts Proposed for FY 82, EPA Budget

The Canadians see the Great Lakes Water Quality Agreement as one of the major success stories in cooperative efforts between the two countries. They are convinced that it has resulted in considerable improvement in water quality in the Great Lakes in the last decade. They are under the impression that citizens and political jurisdictions on both sides of the border recognize that this is so. Looking ahead, they believe a continuing major effort is required to meet existing commitments and to deal with other, newly emerging problems such as toxic wastes. They believe the program set out in the Agreement has worked well, both in terms of commitments imposed on governments and in terms of activities by government intended to enable the IJC to do its job in monitoring the implementation of the Agreement.

Shortly after this Administration took office, the Canadians believed they received a firm commitment from President Reagan when he visited Ottawa that Great Lakes water quality would remain a high priority.

The essential position of the Canadian Government is that if there are to be any budget cuts, they should be introduced in a way that does not alter U.S./Canada cooperation under the Agreement and does not impede progress toward various cleanup goals. This was the brunt of their message to the State Department in April, 1981.

This message, which the State Department has not yet answered, included questions which were intended to set out in detail the rationale for Canadian concerns on specific elements of the cooperative program as they related to budget cuts that the Canadians had heard and read about. Following are some of the questions they asked.

(1) Has the U.S. studied the potential impact of the proposed budget cuts on its commitments under the Agreement, and what were the results of such a study? In asking this question the Canadians

quoted from the Agreement along the following lines: the agreement contains a commitment to "restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin ecosystem". To do this, says the Agreement, Governments should "develop programs, practices and technology necessary for a better understanding o the Great Lakes Basin ecosystem and (should) eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes system."

(2) The Canadians asked about the impact of a reduction on the industrial effluent guideline effort as well as the meaning of proposals to stretch out industrial effluent guidelines. Here they referred to the December 31, 1983 deadline in the Agreement. They pointed out that Article 5 of the Agreement calls on Governments "to ensure that water quality standards and other regulatory requirements of the state and provincial governments" are designed to meet the Agreement's objectives. They worried about the need to establish waste treatment or control programs for all industrial plants, in light of the commitment to substantially eliminate discharges of persistent toxic chemicals and control thermal discharges.

(3) They also asked questions about the effect of the reduction of the research effort and, specifically, what it would mean for development of effluent guidelines, municipal sewage treatment plant deadlines, studies designed to eliminate urban runoff, land treatment for disposal of municipal wastewater, control of phosphorus, and the general impact on continuing research into questions of Great Lakes water quality. They noted the report of the IJC Science Advisory Board that emphasized the need for more research, especially on toxics. According to the Board, "industries producing or using hazardous substances are likely to discharge some of these substances in their waste water effluents. In addition, small quantities of substances may be discharged from many different industries. The problem of assessing the relative importance of the various possible industrial sources is enormous." In addition, "there are insufficient data to permit any reasonable assessment of the contribution of other hazardous organic substances and metals from agricultural, silvicultural, and other land runoff. The absence of these data should be a stimulus for action." The Canadians also referred to the special problem of phosphorus control and the requirement of the Agreement to maintain "a viable research program to seek maximum efficiency and effectiveness in the control of phosphorus introductions into the Great Lakes."

(4) There apparently still is no agreement on phosphorus control even though the initial deadline has long since passed.

(5) The Canadians were especially concerned about the proposal to close the Grosse Ile Laboratory as the only one dedicated to Great Lakes research in the U.S. It is also the main support for the activities of the IJC Science Advisory Board and the main place where research on eutrophication in the Lakes is being carried out. The Canadians see Grosse Ile as the fulfillment of the U.S. commitment under Article 2(E) of Annex III. They also mentioned that the laboratory is important in doing research in hazardous and toxic substances and here again quoted from the Agreement: "Research should be intensified to determine the pathways, fate and effects of toxic substances aimed at the protection of human health, fishery resources and wildlife of the Great Lakes Basin Ecosystem. In particular, research should be conducted to determine: (a) the significance of effects of persistent toxic substances on human health and aquatic life; (b) interactive effects of residues of toxic substances on aquatic life, wildlife and human health; and (c) approaches to calculation of acceptable loading rates for persistent toxic substances, especially those which, in part, are naturally occurring."

(6) As a final comment on Grosse Ile they said that the "ecosystem" approach that the two countries have agreed on for dealing with the Great Lakes suggests that the most effective way of pursuing research on the Lakes is in a centralized facility rather than by spreading it around the country.

(7) A question was asked abou the proposed $2.2 million reduction in the Great Lakes study program (EPA Region V Great Lakes National Program Office). The Agreement calls for implementation of a coordinated surveillance and monitoring program in the Great Lakes system, in accordance with Annex II, to assess compliance with pollution control requirements and achievement of the Objectives to provide information for measuring local and whole lake response to control measures and to identify emerging problems." The IJC has concluded that "the Great Lakes surveillance findings have had an impact on remedial programs and are necessary and essential to evaluate the effectiveness of control measures." The Canadians therefore claim that a continuing, coordinated, surveillance and monitoring program is essential to assess compliance, to provide information for measuring the response of lakes to various control measures and also to identify new problems. They see it as particularly important in allowing us to determine the effectiveness of steps being taken to control pollution and how they can be made more effective. One of the problems they see here is that the ability of the IJC to carry out its role as defined in Article 7 may be seriously limited by the reduction in funds.

(8) A question was asked about whether terminating the state-and area-wide planning program (Section 208 of the Clean Water Act) would have any effects on efforts to deal with non-poing source pollution.

especially phosphorus. They quoted part of Article 6 which says "measures for the abatement and control of pollution from agriculture, forestry and other land use activities" are required. The Canadians see termination of these programs as potentially affecting the U.S. ability to meet its commitments in this area.

(9) A question was asked on what effect reduction in the construction grants program (Clean Water Act) would have on construction of sewage treatment facilities in the Great Lakes Basin. Specifically, they asked how this related to the previously announced $1 billion reduction and what effect the supposed reform legislation announced as part of the economic recovery plan would have on these construction activities. On this point the Agreement says that programs for abatement control and prevention of municipal and urban pollution "shall be completed and in operation as soon as practicable, and in the case of municipal sewage treatment facilities no longer than December 31, 1982." The Canadians pointed especially to continuing sewage treatment problems on Lake Erie, Saginaw Bay, and Lake Ontario. They also claimed that the U.S. contribution to the phosphorus loading is "still substantially above target" and that many U.S. facilities will not be in compliance at the end of 1982. They went on to conclude that reductions in construction grants would delay compliance even more.

(10) They also wanted to know how much money was being transferred to the states for implementation of Clean Water Act programs relevant to requirements under the Great Lakes Water Quality Agreement, which programs were involved and how this change might affect the U.S.'s ability and responsibility for meeting its commitments.

BB/km

Canadian Embassy Ambassade du Canada

1746 Massachusetts Ave., N.W.
Washington, D.C. 20036-1985

March 3, 1982

Dear Mr. Blanchard,

Some time ago Bill Liebold requested we provide information to the Science and Technology Natural Resources Sub-Committee on coordination of Great Lakes activities within Canada, to be used during hearings on your Bill HR3600 next week.

... I am therefore pleased to enclose a paper prepared by officials in Canada detailing those activities, which may be entered on the record. Unfortunately, we are not able to provide a Canadian official to testify.

We look forward to continuing working with you and the Committee in the future.

Yours sincerely,

J. Kinsman
Minister

The Honourable
James J. Blanchard
United States House of Representatives

Canadian Embassy   Ambassade du Canada

THE CANADIAN FEDERAL GREAT LAKES WATER QUALITY PROGRAM

To implement the requirements of the 1978 Canada/U.S. Great Lakes Water Quality Agreement, the Government of Canada undertook to organize and co-ordinate all relevant activities under the federal Great Lakes Water Quality Program. The following is a brief outline of the organization and management of that program.

Mandates

Article IV of The Boundary Waters Treaty of 1909 stipulates that:

> "It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other."

Consistent with The Boundary Waters Treaty, the 1978 Canada-U.S. Great Lakes Water Quality Agreement can be viewed as a further stipulation of Article IV as it applies to the Great Lakes in carrying out Agreement requirements for pollution control measures, surveillance monitoring and research. The Agreement commits the parties to adopt common water quality objectives for the lakes and to develop and implement programs and measures to achieve and maintain these objectives. The Agreement also stipulates a monitoring and advisory role to the International Joint Commission to track the programs of the Parties in carrying out Agreement requirements.

Institutional Arrangements

Requirements of the Canada-U.S. Agreement within Canada fall within the jurisdictions of the federal and provincial (Ontario) governments.

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To ensure that those requirements which fall within provincial jurisdiction are met, Canada has entered into a formal Agreement with the Government of the Province of Ontario, called the Canada-Ontario Agreement on Great Lakes Water Quality (COA).

To co-ordinate activities among federal agencies to meet Agreement requirements a specific interdepartmental committee was established called the Great Lakes Working Group. This group reports to its parent committee called the Interdepartmental Committee on Water (ICW) which co-ordinates all federal water-related activities. The operational function of the Great Lakes Working Group is to plan and implement an annual operational program for the continuing implementation of the Canada-U.S. Agreement requirements. The Working Group and ICW are chaired by Environment Canada which is assigned the federal lead for the program.

Both federal and provincial agencies make available their resources and expertise to the International Joint Commission and its bilateral Science Advisory and Water Quality Boards and their committees to assist the IJC in carrying out its monitoring and advisory role under the Agreement.

Program Structure

The federal Great Lakes Water Quality Program consists of three functional elements:

- Objectives development;
- Controls;
- Evaluation (surveillance and monitoring);

and four specific issues:

- Contaminants;
- Eutrophication;
- Dredging;
- Transportation.

Each of these elements relates to specific requirements of the Canada-U.S. Agreement and research is an integral part of each element and issue.

Program Participants

- Environment Canada (Lead)
- Fisheries and Oceans Canada

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- Health and Welfare Canada
- Agriculture Canada
- Transport Canada
- Atomic Energy Control Board
- External Affairs
- Public Works Canada

Program Budget

Annual federal operating budget is $10 million.

Research Co-ordination

The linkage of federal research programs in different departments and their linkage with operational programs is achieved through membership on committees addressing each of the functional elements and specific issues listed in the paragraph above on Program Structure. These committees are charged with the responsibility for developing analysis of each issue, identification of the work to be carried out (whether research or other) and its priority.

Co-ordination with U.S. research agencies is achieved through special working groups set up under the Science Advisory Board and Water Quality Board. The Science Advisory Board also sponsors international workshops on specific issues and the proceedings are published.

In addition, the customary communication amongst scientists in the Great Lakes Basin is greatly aided by the conference and publication activities of their own professional society, the International Association for Great Lakes Research.

Finally, some benefits accrue to the program by virtue of the fact that, of the research agencies dealing with Great Lakes Water Quality, the principal federal surveillance agency and some national research facilities are co-located at the Canada Centre for Inland Waters in Burlington, Ontario - a federal research facility.

Canada-Ontario Agreement

Within the $10 million operating budget, $1.2 million is ear-marked to assist the province in fulfilling Agreement activities falling within provincial jurisdiction; conditional upon matching provincial expenditure. The total amount of $2.4

.../4

million is used primarily in support of near-shore monitoring of the Great Lakes. It should be noted that this amount supplements the regular provincial pollution control program which also serves to meet Canada-U.S. Agreement requirements.

Also, to complete capital construction of municipal sewage treatment plants in the Great Lakes Basin, an additional $65 million of federal funds supplements a $330 million provincial expenditure for the period 1982/83 through to 1984/85.

Assessment

The principal mechanisms for coordination of the Great Lakes Water Quality Program within Canada and bilaterally with the United States were established in connection with the 1972 Great Lakes Water Quality Agreement and have been developed and refined over the past decade. The Canadian view is that these mechanisms are working well and contributing effectively to the Program objectives. Canada generally supports initiatives which will contribute to the effectiveness of management of the Great Lakes Water Quality Program and the maintenance of necessary research to achieve its objectives.

APPENDIX III

Additional Material Submitted for the Record

STATEMENT OF CONGRESSMAN HENRY J. NOWAK

SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH AND ENVIRONMENT

March 9, 1982

Mr. Chairman, I appreciate the opportunity to express my support for H.R. 3600, the "Great Lakes Protection Act of 1981."

As a representative from one of the Great Lakes states, I am deeply concerned about the future of the Great Lakes. The resources associated with the lakes, their vast size, and spectacular beauty make them vital to the life and economy of the United States. Unfortunately, the outlook for sustained federal support for the Great Lakes is not good. The Administration has proposed reductions in funding for Great Lakes research, planning and management programs. These cutbacks will obviously deter the progress that we have made in improving the water quality of the lakes.

My hometown of Buffalo, New York, is located at the eastern end of Lake Erie. Lake Erie is the fourth largest of the Great Lakes, but the twelfth largest freshwater lake in the world. Once called a "dying lake", it has been making steady recovery with the help of research, regulations and care. I am hopeful that these progressive efforts can continue. The Great Lakes Protection Act -- which I am pleased to co-sponsor -- represents a significant opportunity for continuing preservation and protection of the environmental quality and resources of these lakes. It is a vital step in recognizing the importance of the Great Lakes as a national resource and making their protection a matter of ongoing national concern.

I strongly urge, therefore, that the Subcommittee give careful consideration to H.R. 3600. It is through the enactment of this legislation that we can continue to treasure the Great Lakes --- an abundant water supply, an important link in our transportation network and the source of numerous recreational opportunities.

Statement of FMC Corporation on HR 3600 to the Natural Resources and Environment Sub-Committee of the Committee on Science & Technology, U.S. House of Representatives, March 9, 1982.

FMC Corporation is an international producer of machinery and chemicals for industry, agriculture and government. Among the industrial chemicals we manufacture are phosphorus derived compounds used in a number of industrial, consumer and agricultural applications.

As a result, we have been closely involved in the formulation of policies directed toward control of phosphorus loadings to the Great Lakes, due to their particularized impact on this national water resource. As members of the Committee are aware, phosphorus control was the cornerstone of the Great Lakes Water Quality Agreement between Canada and the United States, signed in 1972 and amended in 1978.

Largely as a result of this Agreement, a significant portion of federal dollars allocated for Great Lakes research over the last decade were spent in an attempt to better understand the phenomenon of eutrophication, and the contribution of phosphorus in this regard. The 1980 catalog of federal and non-federal funded research and development prepared by the National Marine Pollution Program Office as part of the Federal Pollution Plan, as well as an inventory of both Canadian and U.S. Great Lakes related research activities prepared by the Great Lakes Advisory Board in 1976, clearly indicate the importance - if not disproportionate importance - assigned to phosphorus related research.

Since the Great Lakes Water Quality Agreement was signed, significant progress has been made in controlling phosphorus input to the Lakes. Importantly, for the purposes of this Committee, research conducted by government, university and industry experts has substantiated the need for good sewage treatment as a means not only of controlling phosphorus discharge, but also other pollutants which may significantly affect Great Lakes water quality. Policies resulting from such research, i.e. the establishment of rigorous phosphorus discharge requirements for major sewage treatment plants in the Great Lakes Basin, have had important consequences. As the Great Lakes Water Quality Board reported to the International Joint Commission in November of last year:

> A major highlight is that efforts to remove phosphorus at municipal treatment facilities in the Lower Lakes Basin have resulted in the virtual achievement of an average phosphorus effluent limitation of 1.0 mg/L at each facility, as called for in the 1972 Great Lakes Water Quality Agreement. (1981 Report on Great Lakes Water Quality, Great Lakes Water Quality Board report to the International Joint Commission, p. 47.)

Water quality models for the Great Lakes, developed through the joint efforts of private and public sectors, which predicted significant water quality improvements resulting from improved sewage treatment, are today substantiated by actual, demonstrable improvements in lake water quality throughout the Great Lakes. As William Steggles of Ontario Environment reported to the IJC on behalf of the Great Lakes Water Quality Board in November, "...we have accomplished Chapter 1 in the phosphorus control program." (Transcript, 1981 Presentation to Commissioners, Great Lakes Water Quality Board, p. 85.)

In addition, a decade of intensive research into the impact of phosphorus in the Great Lakes has greatly increased the appreciation of the very complexity of the eutrophication process and the significance of factors such as climate, light, water temperature, the nutrient cycle, etc. on eutrophication. For instance, it is only within the last two years that scientists at the Great Lakes Large Lakes Research Station at Gross Isle, Michigan identified the apparent limiting effects of another nutrient, silica, on algal species in Lake Michigan.

Similarly, a much greater understanding of the impact of diffuse, or non-point sources of phosphorus exists now than did ten years ago, due largely to extensive phosphorus related research. Indeed, when the Lake Erie Enforcement Conference convened in 1965, the significant contribution of phosphorus and other pollutants from atmospheric sources, today acknowledged to account for up to 20% of the total phosphorus loadings to the Great Lakes, was not even considered a pollution source.

In short, our collective understanding of the Great Lakes ecosystem is today far more sophisticated then it was when "Lake Erie is dead" became a rallying cry some fifteen years ago. As a result, policy decisions are increasingly being made on the basis of good science, rather than emotion.

HR 3600, introduced by Congressman Blanchard, addresses this trend in a constructive manner. In particular, FMC supports those Sections of Titles II and III (Sections 201 and 202 of Title II and Sections 301-303 of Title III) of the proposed Great Lakes Protection Act which would, we believe, lead to better management of current federal research and development expenditures in the Great Lakes. We believe this bill, if enacted, would take the already encouraging and constructive efforts of the National Marine Pollution Program Office of the National Oceanic and Atmospheric Administration a next logical step; i.e. active day to day oversight of federal R&D efforts in the Great Lakes.

It may be argued that we do not need to create a separate Great Lakes Research Office at a time when federal budgetary constraints are particularly severe. However, we would suggest that a minimal investment in this sort of oversight mechanism may have a positive fiscal impact in and of itself.

Previous testimony on HR 3600 has focused on the 20 plus federal departments and agencies which currently are involved in Great Lakes research. Equally important in this context, are a similiar number of congressional committees which must routinely be involved with authorization, appropriation and oversight of separate Great Lakes R&D programs. While HR 3600 would not alter in anyway the responsibilities of these committees, a Great Lakes Research Office would undoubtedly be in a position to provide the Congress, as well as state and local governmental entities, with comprehensive information on the entirety of the Great Lakes R&D effort; information which will be increasingly vital to decisions on the allocation of scarce public monies for future R&D projects.

If emerging concerns with respect to Great Lakes water quality are to be as completely addressed as phosphorus was over the past ten years, then skillful interagency coordination and program prioritization are necessary. Such requirements are part of the proposed duties of the Executive Director of the Great Lakes Research Office. In addition to assisting to eliminate waste in the development of a federal R&D budget, the Executive Director would also be in a position to provide an adequate return on the sunk investment of millions of dollars already spent on Great Lakes R&D over the last decade. In this sense, the Director would be providing an important maintenance function, consistent with good management practice in both the public and private sectors.

HR 3600, in our view, seeks to adjust the longstanding national commitment to Great Lakes water quality to new budgetary realities. In 1972 Congress, specifically through Section 108 of the Federal Water Pollution Control Act (PL-92-500), designated the Great Lakes as a priority water resource and immediately authorized $25 million toward controls to abate pollution. Since then, in addition to millions spent by private industry on pollution control technology, an additional five billion in federal monies has been spent on the construction of publicly owned sewage treatment plants throughout the Great Lakes Basin. The results of this investment are now beginning to be realized. In this sense, HR 3600 may be viewed in terms of protecting the significant progress already made as a result of a substantial commitment to this vital source of fresh water.

In summary, it is our view that HR 3600, as proposed by Congressman Blanchard, does not necessarily mean more research, but better, more effectively managed research, which can be appropriately applied to the future policy needs of the Great Lakes.

It seems apparent that research efforts on a scale approaching those related to the effects of phosphorus on eutrophication in the Great Lakes are no longer feasible in the eighties. Thus, if new water quality issues are to receive the attention they deserve, federal monies must be more skillfully allocated and managed, as is now proposed in HR 3600.

STATEMENT OF
ALFRED M. BEETON
DIRECTOR OF THE GREAT LAKES AND MARINE WATERS CENTER
THE UNIVERSITY OF MICHIGAN
BEFORE THE
NATURAL RESOURCES AND ENVIRONMENT SUBCOMMITTEE, COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

I am Alfred M. Beeton, Director of the Michigan Sea Grant Program of Michigan State University and the University of Michigan and Director of the Great Lakes and Marine Waters Center of the University of Michigan. For twenty-five years I have been directly involved in research on the Great Lakes as a Federal employee, professor, advisor to the Wisconsin Department of Natural Resources, consultant to the Metropolitan Sanitary District of Chicago, consultant to the U.S. Environmental Protection Agency, as well as to industry and international agencies. At present I serve as Chairman of the International Environmental Programs Committee and as a member of the Environmental Studies Board of the National Research Council/NAS. I am not presenting this statement as a spokesman for the University of Michigan, but as a concerned citizen.

Size and Importance of the Great Lakes

The St. Lawrence Great Lakes and their connecting waters constitute one of the largest sources of freshwater of the world. The five lakes have a surface area of 95,000 square miles within a drainage basin of about 295,000 square miles. These lakes are truly the inland seas of North America. Individually the lakes rank among the fifteen largest lakes of the world. Lake Superior, with a surface area of 31,700 square miles, is the largest fresh water lake.

The lakes have long been the key factor in the development of the mid-continent of North America. They provided, and continue to provide, transportation into the heartland. The fish stocks have sustained commercial and recreational fishing and the coastal zone is used for recreation, industry and choice home sites.

The major importance of the lakes is that they contain one-fifth of the world's surface supply of freshwater - a total volume of 5,413 cubic miles of high quality water. The lakes are truly a very valuable national resource, especially at this time in history when water is becoming scarce elsewhere in the country and the world.

Over 24 million people obtain their domestic water supplies from the lakes. Industries which require large amounts of water and inexpensive transportation, such as the steel industry have found the Great Lakes an ideal place to locate. About 70 percent of the U.S. steel production and over 60 percent of the Canadian steel are produced in the Great Lakes region.

The combined shoreline of the lakes is almost 10,000 miles. Consequently, it is longer than the U.S. west coast. The coastal zone of the Great Lakes includes major recreation areas such as the Sleeping Bear Dunes, Apostle Island, Pictured Rocks, Indiana Dunes, and state, county and municipal parks. The Great Lakes and their shorelines attract many tourists to the region and tourism is a major industry in all the Great Lakes states, especially Michigan.

Those living in Western states short of water certainly recognize the overwhelming importance of water as a constraint on agricultural and industrial development. This is also well recognized in the Great Lakes region and many of us believe that our abundant supply of high quality water is the key ingredient for recovery of the economy in the region. Governor Milliken in his State of State message said "The Great Lakes offer unique opportunities to industries in need of clean water for specialized processes. The volumes of water available for transportation, power development, industrial growth, and irrigation are tremendous. However, we must recognize that the supply is not limitless and in the coming years many interests, both environmental and commercial, will vie for allocation for this precious resource."

Conflicts in Use of the Resource

The varied beneficial uses of the Great Lakes have frequently led to conflicts, e.g., recreational fishing and commercial fishing, waste discharge and recreational use, high water levels feared by property owners because of shore erosion are favored by shipping and the hydroelectric power industry.

Certainly some of these problems have resulted from mismanagement or lack of any coordinated management plan which would have assisted in equitable resolution of resource utilization conflicts.

Present and Previous Coordination

Several institutional arrangements exist which can offer some assistance in planning, problem identification and coordination of certain Great Lakes interests. The Great Lakes Fishery Commission is an international commission dealing with fisheries problems such as sea lamprey control, the International Joint Commission deals with pollution of the US/Canadian boundary waters, and the Great Lakes Commission was established by the states to deal with concerns of importance to the states such as Great Lakes shipping. The now defunct Great Lakes Basin Commission, a federally supported organization, was the only organization which attempted to deal with coordination between federal and state agencies and involved citizen input. Unfortunately funding for river basin commissions ended September 30, 1981.

Increased Need for Coordination

All of us who work in the Great Lakes have been acutely aware of the continuing need for coordination of the various Federal, state, and local activities concerned with research, management and protection of the Great Lakes environment. To often the expertise, manpower and research facilities are not used effectively or efficiently due to poor communication and lack of coordination. Consequently, instead of working together in problem solving agencies and organizations sometimes find themselves working at cross purposes.

The need to coordinate Federal programs and projects on the lakes is greater now than ever in view of the budget cuts which have greatly impacted the research and monitoring essential to supplying the data needed for making wise decisions on use of the lakes. It has been estimated that funds for Great Lakes research and monitoring will decrease from $19+ million (FY 81) to $8.9 million (FY 82). Already we have seen significant cutbacks in the research effort at Federal facilities, universities, and state agencies. The monitoring program which the U.S. Environmental Protection Agency conducts as part of the Water Quality Agreement of 1972 is being drastically cut back. Consequently, we must coordinate our activities in such a way as to make best use of the remaining facilities and people.

Recommendation

I believe that HR 3600 is an important piece of legislation essential to continuing our efforts to make best use of our research and monitoring activities to protect the Great Lakes. Consequently, I strongly recommend support for HR 3600.

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COMMITTEE ON SCIENCE
AND TECHNOLOGY

Ohio
LEAGUE OF
WOMEN VOTERS

5731 Caranor Drive
Kent, Ohio 44240
December 2, 1981

To: The Honorable Don Fuqua, Chairman, House Committee on Science and Technology
The Honorable James J. Blanchard
From: Edith Chase, Energy Chair, League of Women Voters of Ohio
Re: Statement on H.R. 3600, The Great Lakes Protection Act of 1981

In order to meet the present and future water needs of the people of the United States, the League of Women Voters of Ohio believes that overall long-range planning and development of water resources requires better coordination and organization at the federal level. The League supports policies and procedures which provide for joint, cooperative planning and administration along watershed lines and across political boundaries.

The League of Women Voters of Ohio supports the Great Lakes Protection Act of 1981, H.R. 3600, as a means to protect, preserve and enhance the environmental quality of Lake Erie and all the Great Lakes. The increasing and competing demands upon the lands and waters of the Great Lakes Basin occasioned by population growth and economic development have resulted in the loss of living aquatic resources, wildlife and wetlands; permanent and adverse changes to ecological systems; decreasing open spaces for public use; and shoreline erosion.

Responsibilities of federal agencies have been divided. State and local governments have been more concerned with local problems than with the Basin as a whole. New pollution problems--toxic substances and airborne contamination--need added attention. Energy development and the loss of prime agricultural land will increasingly affect the Basin and its residents.

Despite these problems, the Great Lakes Basin Commission has been abolished. The U.S. Water Resources Council's Principles and Standards--guidance for water and related land resources planning--are to be replaced by recommendations and guidelines established by Executive Order and an Office of Management and Budget Circular, as yet unspecified. At the same time, research budgets are being cut and the Argonne National Laboratory has been eliminated.

At the November 18-20, 1981 meeting of the International Joint Commission in Cleveland, the IJC Science Advisory Board told the Commissioners that current efforts to reduce federal spending in the U.S. will adversely affect the level of funding for Great Lakes research and surveillance. While the specific subject areas of the cuts have not yet been finalized, it is hard to imagine that such reductions will not have serious consequences for the Great Lakes Water Quality Agreement of 1978. The League is concerned that the necessary steps be taken for continued progress toward the objectives of this Agreement, to restore and enhance water quality in the Great Lakes System.

This bill, H.R. 3600, recognizes that the Great Lakes are a natural resource of national and international significance. Its requirements for a Great Lakes Research Office and for an environmental assessment of proposed federal actions that significantly affect the Great Lakes should result in increased public awareness and improved communications, coordination and cooperation among all levels of government. Far more could be accomplished for the public funds presently invested if all the programs were coordinated.

The Ohio League urges your support of H.R. 3600. We regret that no representative can attend this hearing because of the cost of travel.

To facilitate public comment, we urgently request that at least one public hearing be held in a central location in the Great Lakes Basin. Thank you for this opportunity to present our views.

Edith Chase

cc J. William Stanton

THE LEAGUE OF WOMEN VOTERS OF MICHIGAN
202 MILL STREET LANSING, MICHIGAN 48933-1997 (517) 484-5383

January 14, 1982

The Honorable Don Fuqua
Chairman, House Committee on Science and Technology
House of Representatives
Washington, D.C. 20515

Dear Representative Fuqua:

The League of Women Voters of Michigan is pleased to offer its SUPPORT of H.B. 3600 - THE GREAT LAKES PROTECTION ACT OF 1981 - for the following reasons:

a. The Great Lakes are the most significant and substantial source of fresh water in the United States and deserve the best policy and program efforts this government can manage to maintain and improve their quality.

   This need is particularly important since the lakes are shared with Canada and the governments of the two countries have committed themselves to this goal in the Great Lakes Water Quality Agreement of 1978. This League has supported the Agreement and believes this bill will support its implementation.

b. Michigan is in a unique position to appreciate the value of the Great Lakes because it borders four of the five bodies of water. It can perceive the needs of the lakes as no other state can. Michigan's contact with other Great Lakes states indicates that no single jurisdiction can be expected to encompass the complex considerations necessary in dealing with the Great Lakes Basin as an ecosystem.

   However, a single coordinating organization could enhance communication among the jurisdictions, as well as between the state and federal government agencies which have responsibilities for some aspect of Great Lakes research or programs. The League believes in informed cooperation among groups which share such responsibilities and believes that H.R. 3600 can accomplish that goal.

c. The environmental impact assessment required under this act would provide the mechanism for insuring that significant impacts upon the lakes would be examined before irrevocable actions proceed. The assessment seems a small step to take to reassure ourselves that the positive actions of one program will not be undermined by a negative implication from another.

   The League of Women Voters believes that public input should be allowed - indeed, required - in those assessments to provide citizens with access to the process which may affect one of their most significant natural treasures.

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COMMITTEE ON SCIENCE
AND TECHNOLOGY

The League of Women Voters was one of the first citizen organizations to recognize the need for government participation in the protection of our natural resources. Some valued programs have already been lost to new administrative reordering of priorities. The League sees the Great Lakes Protection Act as a reaffirmation of the value of this resource and as assurance that our priority for a strong environmental commitment will be upheld.

Please notify us if hearings are planned on this issue in the Great Lakes Basin as we would like to have the opportunity to speak.

Sincerely,

Beverly McAninch

Beverly McAninch
President

Merrill Clark

Merrill Clark
Natural Resources Chair
27427 M60 W
Cassopolis, MI 49031

cc: The Honorable James J. Blanchard